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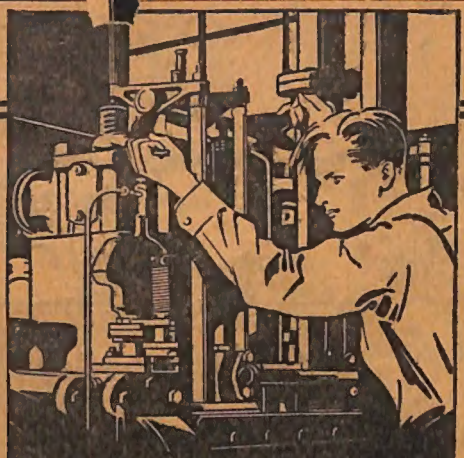
MAR 1939



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(Photo made by Lownds-Ewing in the New York Central Railroad yards on the West Side of New York City. The subject is Charlie Steidle, a New York Central switchman)

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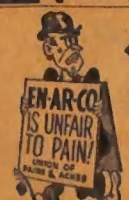

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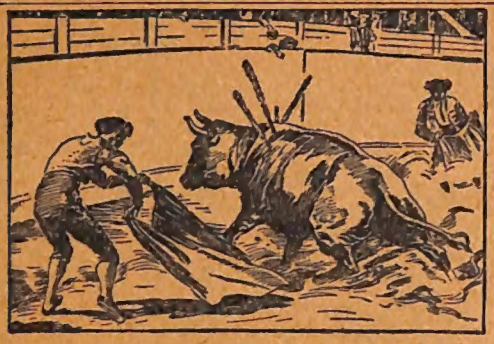

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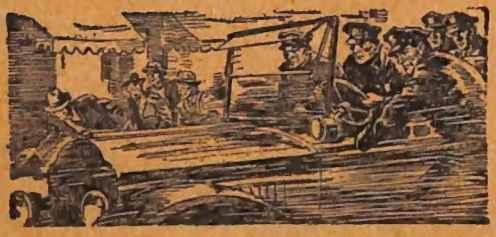

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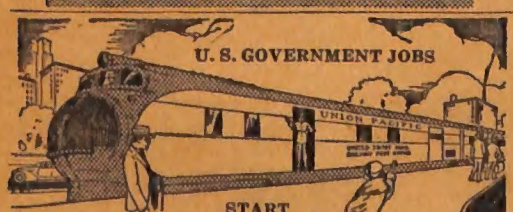

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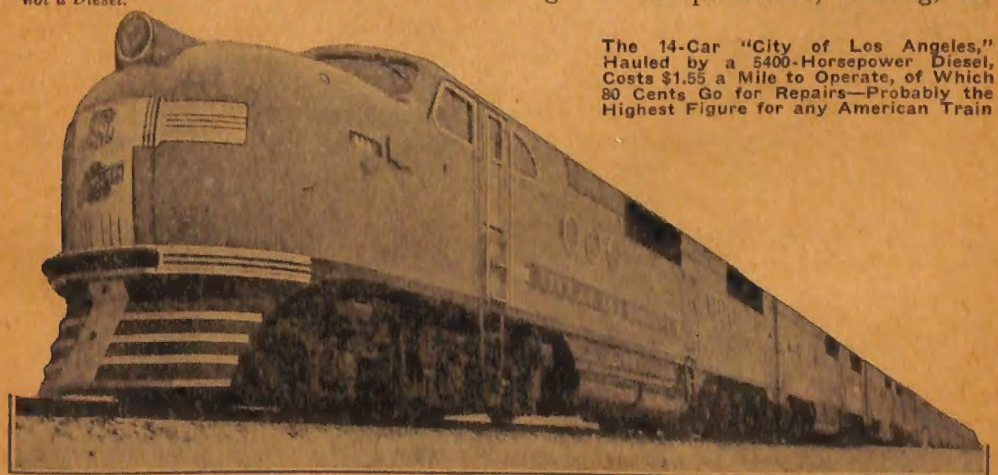
Diesel Against Steam

Herewith: An Attempt to Appraise the Merits and Demerits of Each as They Appear When Stripped of Ballyhoo

FOR five years now, possibly the five most consequential and certainly the five most interesting years in recent railroad history, the Diesel-electric locomotive has been warring with the steam locomotive. The conflict burst into the open, after a long period of preliminary skirmishes, when the first Diesel-electric streamliner, the Burlington's original *Zephyr,* rolled into the light of day in April, 1934.* Since then the engagement has been more noisy and picturesque than sanguine. The attacking forces have been pounding on drums, waving huge banners with the words "thermal efficiency" blocked on them in letters ten feet square, filling the skies with rockets, and setting off big firecrackers when they ran out of ammunition. And every once in a while the defenders open up with a sullen blast that sets the opposition back on its haunches and shoots its banners full of holes; and the combat resumes its lively pace.

The preparations for this vivid encounter began long years ago. They began way back before 1925, when the Ingersoll-Rand Co. constructed a 300-horsepower Diesel-electric switcher for use in the Bronx yard of the Central Railroad of New Jersey, in New York City, which forbade the operation of steam engines within its limits because of their smoke. About that time, however, many people were working with the notion that the Diesel-electric combination had many virtues other than the negative one of being smokeless. Enormous improvements, chief among them the development of the lighter two-cycle engine, were being effected — improvements which permitted the tangible advantages of the ponderous, stinking, un-

** The UP's M-10,000 was completed in February, 1934, but was equipped with an ignition-fired motor, not a Diesel.*



The 14-Car "City of Los Angeles," Hauled by a 5400-Horsepower Diesel, Costs $1.55 a Mile to Operate, of Which 80 Cents Go for Repairs—Probably the Highest Figure for any American Train

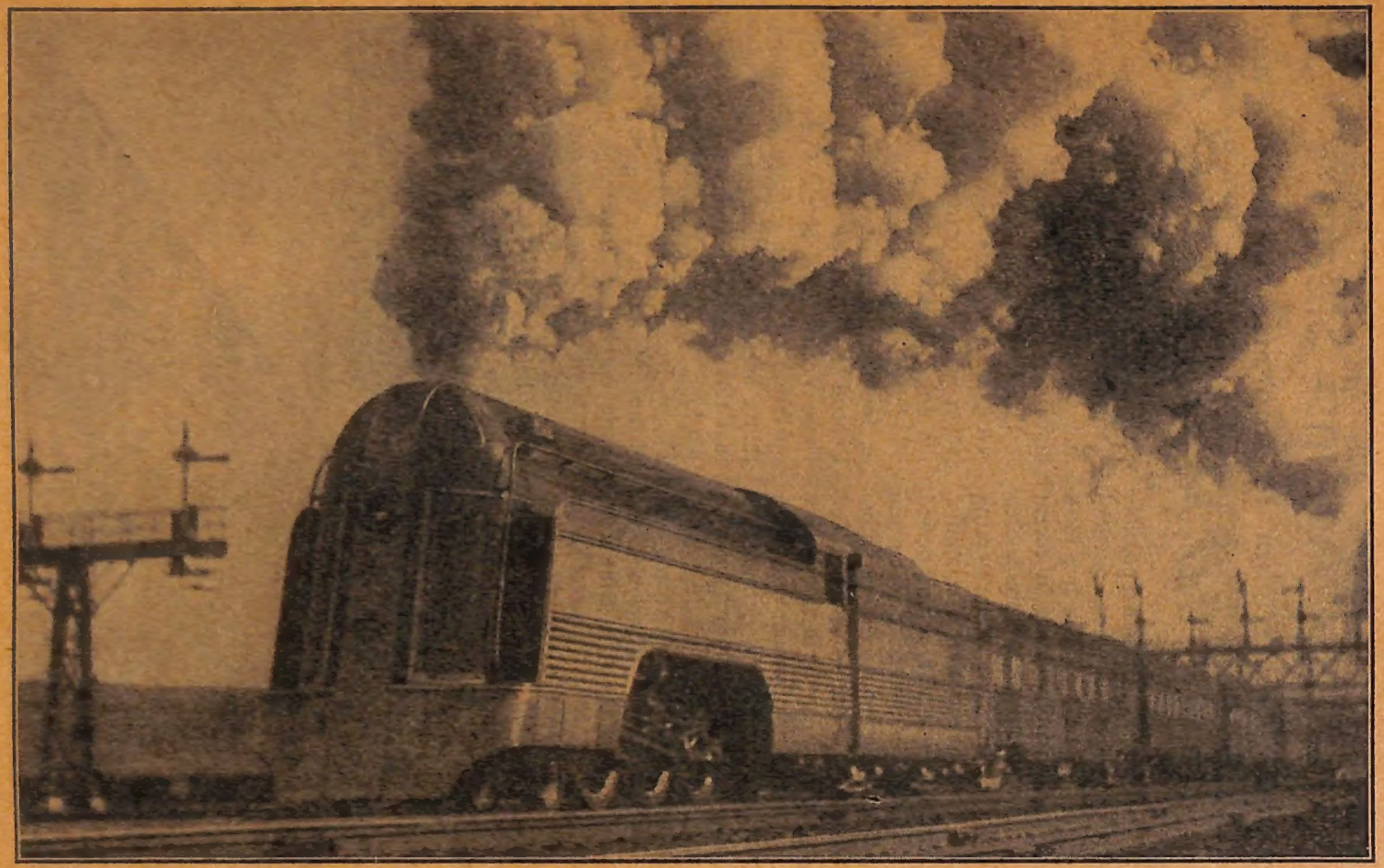
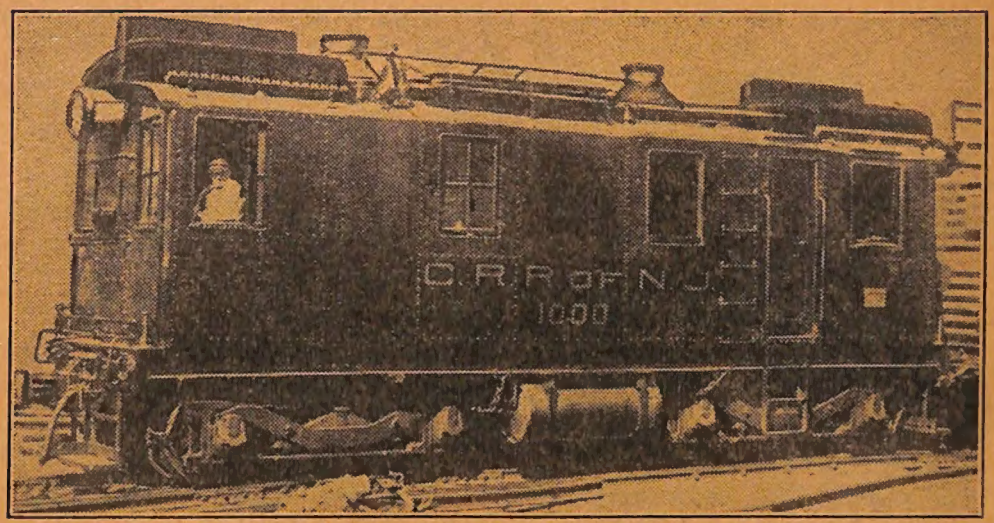


Photo by Lucius Beebe

The Reading's "Crusader", Consisting of a Streamlined Pacific Type Steam Locomotive and Stainless Steel Cars, Operates between New York City (Jersey City) and Philadelphia, Covering the 90 Miles i n from 93 to 98 Minutes, Including as Many as Six Stops



The First Diesel-Electric for Regular Service in America Was This 300-Horsepower Switcher, Constructed by Ingersoll-Rand for the Central of New Jersey in 1925. However, a Demonstration Engine Was Built the Year Before, and It Was Tried Out on Ten Different Railroads. Ingersoll-Rand Is Now out of the Diesel-Electric Locomotive Business; the Last Five Machines It Turned out Were for the New Haven, in 1936

dependable pile of junk to amount to something. These real advantages are its simplicity and cheapness of operation; unlike a gas motor, it needs no ignition system, and can burn anything burnable—at least theoretically. And it is three or four times as efficient thermally as the reciprocating steam engine.

Particularly in the hands of the brilliant engineers of General Motors Corporation, so familiar to all owners of automobiles, the Diesel engine began to promise great things. Much greater things, in fact, than it ever seems to have promised to companies like American Locomotive Co. and Fate-Root-Heath, who already were manufacturing Diesel-electric switchers and gas-electric cars. What General Motors envisioned was not only a lot of Diesel-electric switchers, but Diesel-electric road engines, humming along with passenger trains full of happy people and maybe even rattling over the rails with the heaviest freights.

So, in 1930, General Motors bought out the Winton Engine Co. (also familiar to old-time auto owners), manufacturers of Diesel engines, and its affiliate, the Electro-Motive Corporation, well-known to railroad mechanical men as designers of gas-electric cars and motors. With this setup under its wing, it went ahead at full speed. But although railroad men were more than tolerant to the idea of Diesel-electric switchers, they were not wildly enthusiastic about the prospect of internal combustion engines for main line service. Perhaps it was because there is more to an internal combustion locomotive than an internal combustion engine. In order to hitch the equable power of a gas or Diesel engine to wheels, a method of transmission is necessary. In autos this method is the gear shift and clutch. But no such mechanical arrangement was (or is yet) feasible for the powerful, heavy engines required for railroad work. Therefore the electric drive is re-

sorted to; this means not one but three motors on every locomotive: the Diesel engine, the generator it runs, and the electric motor which the generator supplies with power. Which is why a Diesel-electric is heavier than a steam engine of the same tested horsepower and also why it is four times as dear. And why it maybe never will be built less than three times as expensively. Having had not-too-happy experience with gas-electric cars employing this triplication of effort, railroad men were rather skeptical.

The details of the story are not available in all their authenticity, but from the things which really happened they may be deduced with fair accuracy. General Motors felt the Diesel-Electric would find a place for itself on the main line, but it was absolutely convinced that it was the coming thing in switch engines. A Diesel-electric exerts a vastly greater starting tractive force (or pull) than a steamer of the same capacity because its full horsepower can be developed in starting; hence one of considerably less horsepower can equal the performance, in the lower speed ranges, of a much bigger steamer. Add to this the fact that the Diesel doesn't have to stop for fire cleaning or boiler wash, and you cannot be less then partial to it for switching service.

But General Motors, which is nothing if not conscious of the opinions of the American people, naturally saw the sense of selling the Diesel to them. If every fourth man, woman, and child were acquainted, in no matter how muddled a fashion, with the high virtues of the Diesel, the engines, switchers included, could be peddled that much easier among the railroad buyers. And the people could be impressed the easiest and the most effectively if they were hitched to passenger trains. But how to hook them to passenger trains? Most trains worth considering required at least 2000 horsepower to move them rapidly, and these trains, despite such pleasant innovations as air-conditioning, were nothing to paralyze the attention of a nation highly vulnerable to sensational novelties.

All this, to be sure, is somewhat of an oversimplification of what transpired; but it is faithful to the facts, and the next episode in the story dove-

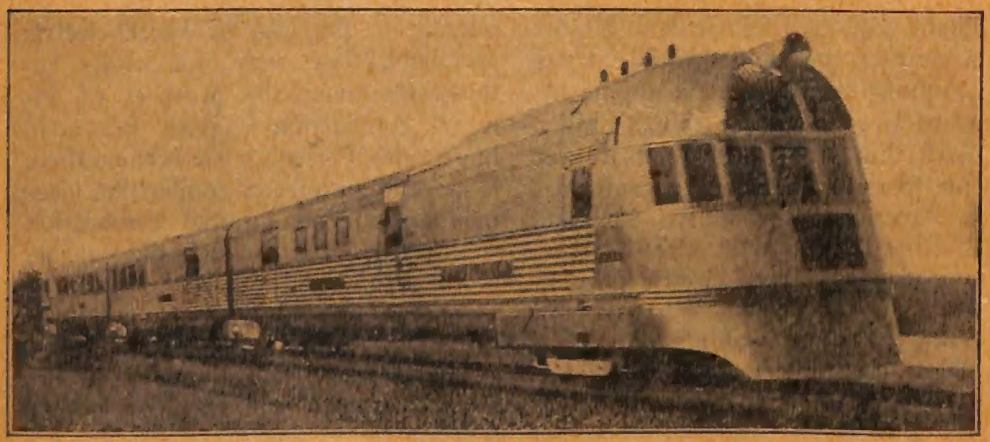
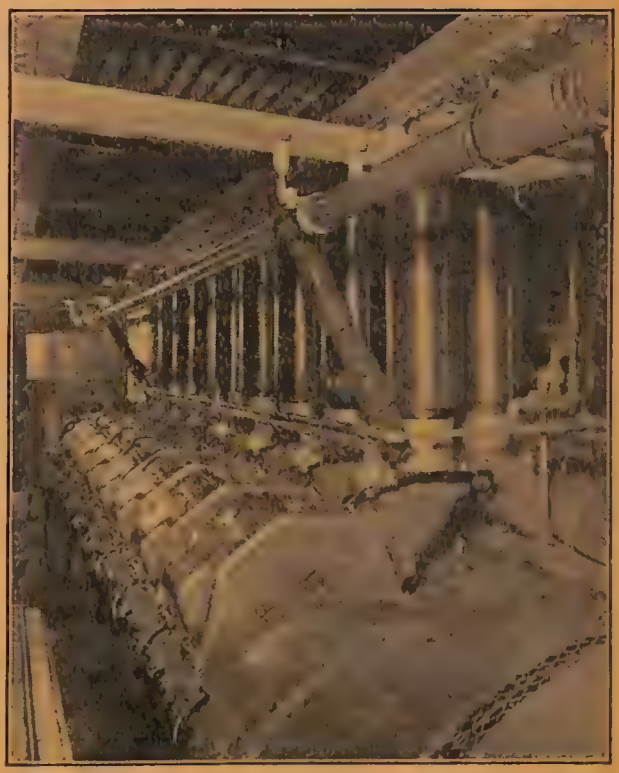


Photo by Railroad Photographs, 47 Royal St., Allston, Mass.

Here is the Burlington's Original "Zephyr", Which Probably Brought the Diesel Motor More Publicity in Thirty Days Than It Would Have Got Otherwise in Thirty Years

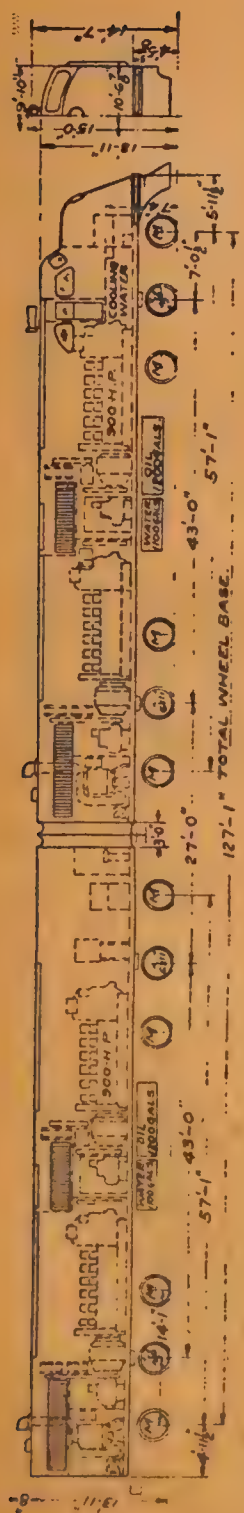
tails perfectly with it. The Diesel-electric engine simply was installed in a very light train of fixed size and sensational characteristics, which is to say, an ultra-modern train that could surpass a hundred miles an hour on existing rails. The Burlington *Zephyr* was this kind of train. A three-car unit weighing only 95 tons (a standard Pullman weighs 83 tons), it was powered by a 660-horsepower engine. An extremely high ratio of horsepower to train weight, but nobody noticed that; and the Diesel-electric was acclaimed not only for being able to run fast on little fuel, but confusingly enough for the very things which from any scientific point of view were its greatest drawbacks.



Part of the 1200-Horsepower Diesel Engine Which Makes the Illinois Central's "Green Diamond" Go

It could not be overloaded, and in any case could not haul much of a burden at high speed, and therefore the cars were built of light materials. Those of the *Zephyr* were lighter and very much smaller than standard, and to boot they were articulated, that is, one truck carried the ends of two cars. But it happened that these very things were seized upon and ballyhooed as some of the most revolutionary achievements in railroad history. More confusing, the public associated such resplendent and dubious innovations with Diesel-electric engines exclusively. Not that there was anything dubious about lighter equipment (it was coming and had to come, and soon probably will be universal) but that skimping on size and riding comfort were concessions to the then limited abilities of the Diesel and not to any conviction among railroad men that coaches ought to be narrow and tight as highway busses. Worse yet, at least from the standpoint of the order-starved manufacturers of steam engines, the public actually got the idea that a stainless steel car, with sponge rubber seats and Negro porters and colored wash bowls and high-chested hostesses, were also the sole attributes of trains with Diesel engines. If General Motors publicity men ever were ungentlemanly enough to permit themselves a guffaw, this was the time. It was a magnificent victory for their noble art, and as easy as taking candy from a baby.

STEAM locomotive men were caught going the wrong way. Here they were, building great big heavy



Baltimore & Ohio Now Owns Six Diesel-Electrics of 3600-Horsepower Rating—Nos. 51-56, Which Are Employed to Handle the "National", "Capitol", and "Royal Blue" Limiteds. Very Much Like the 3600-Horsepower Machines Hauling the Santa Fe's "Super Chief", They Weigh 570,600 Pounds, Exert 90,000 Pounds (Starting) Tractive Force. Their Energy Is Derived from Four 900-Horsepower V-Type Diesel Engines with Twelve 8 x 10-Inch Cylinders Apiece; and There Are Eight Electric Traction Motors (Marked M) on the Driving Axles

locomotives for great big heavy trains, and along comes this upstart with the idea of light, small trains and light, small engines. "Why," snorted one steam designer, "we were doing that forty years ago." And so they were; back in the Nineties light steamers were handling light trains, sometimes on mile-a-minute averages, which, considering the track available and the dependability of mechanical parts, were greater achievements than most fast runs today.

"Hell's bells," complained another dolefully, "we can make a steamer cheaper to operate, faster running, just as grotesque looking, and with the same capacity—provided the railroad doesn't try to hang more cars on her than they would on a Diesel of the same capacity." This too was true, with certain exceptions; but the fact remains they did not.

Another sobbed: "Reading the papers, you'd think there was a law against a steam engine's handling a light train." But what perhaps they might have done, and didn't do, was to work out a small streamlined engine and hook it onto a small streamlined train ten years ago. Under such circumstances the psychology of their success might have carried them along to rewards which now have been denied them.

This is far from implying that the Diesel-electrics' only absolute advantage has been its high powered publicity men—even if it has been the biggest one. Had steam men got together with car builders and beaten the Diesel boys to the gun, had they pushed high-speed trains to a success they hadn't yet achieved, the Diesel-electric still would be making its own way in the world. They might be pulling some of the transcontinental trains they are now, and doubtless all the swift short-run trains they are now; and they certainly would be doing practically as well in the switcher business.

But the thunderous blasts of publicity which accompanied the debut of the new type of motive power in road service gave it a psychological impetus which has carried it along with sustained success, even over unexpected obstacles and mistakes which might have

General Motors' Great Charles F. Kettering, Vice President in Charge of Its Research, Is Not Only a Mechanical Genius, but a Crackerjack Salesman. Here He Is Shown Drumming Up the Fine Points in the Cab of a Diesel-Electric to C. W. Galloway, Operating Vice President of the Baltimore & Ohio (Sitting at the Controls)

retarded it seriously. And this hardly is idle theorizing: one of the most astonishing aspects of the present-day picture is the manner in which the Diesel is being nursed along by hard-boiled superintendents of motive power and mechanical engineers—the very kind of men who would not tolerate a three-cylinder or a booster-equipped locomotive because it costs a bit more to maintain, and who seemed resolutely opposed to any scheme or device which might render the steamer more efficient at the expense of simplicity.

Thus far the Diesel's most important and indisputable success has been in the switcher field. For every Diesel road engine, there are dozens of switchers on which the builders have realized uniformly higher profits, and the railroads more operating satisfaction and a clearly demonstrable saving of money. As we have pointed out, a Diesel switcher does not cost much more than a steamer of the same actual pulling power, and hence, with almost continuous availability between shoppings and somewhat lower operating costs, can save money. Moreover, the Electro-Motive Corporation is now renting them to railroads, who can pay for them out of current expenses—almost out of the money they save, the Diesel-electric salesman will promise. The fact that Baldwin and Alco, our two largest steam locomotive manu-

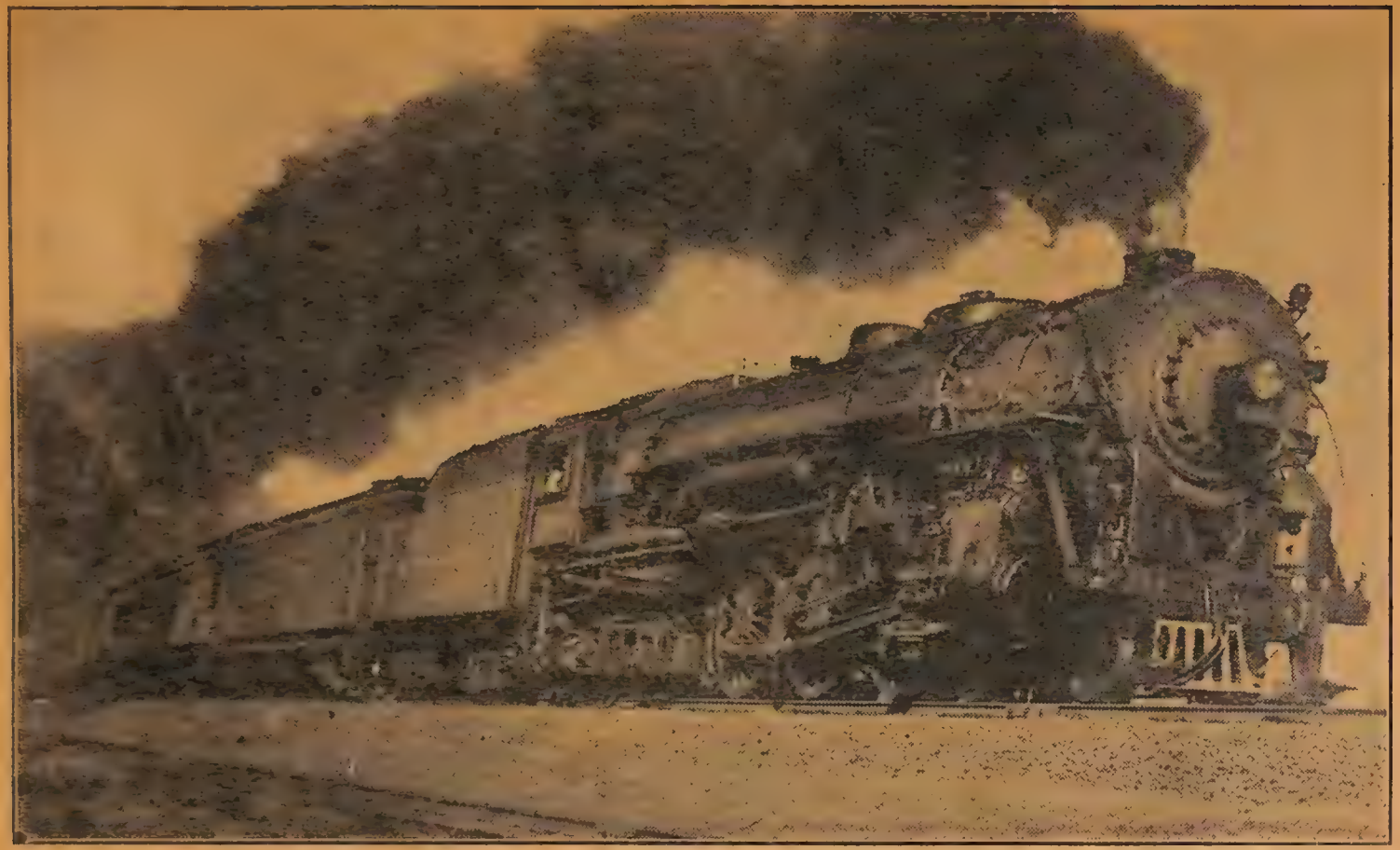


Photo by Railroad Photographs

Stronghold of Steam Power Is the New York Central, Whose Fleet of Hudson Type Locomotives Have Proved Highly Successful in All Kinds of Service, from Pulling the Fast Overnight Merchandise Trains between New York City and Buffalo to Wheeling the "Twentieth Century Limited" at an Average Speed of More Than a Mile a Minute. This Shot Was Taken on the Boston & Albany, and Shows One of the B&A 4-6-4's Heeling to the Curve at Weston Park Hill, Riverside, Mass.

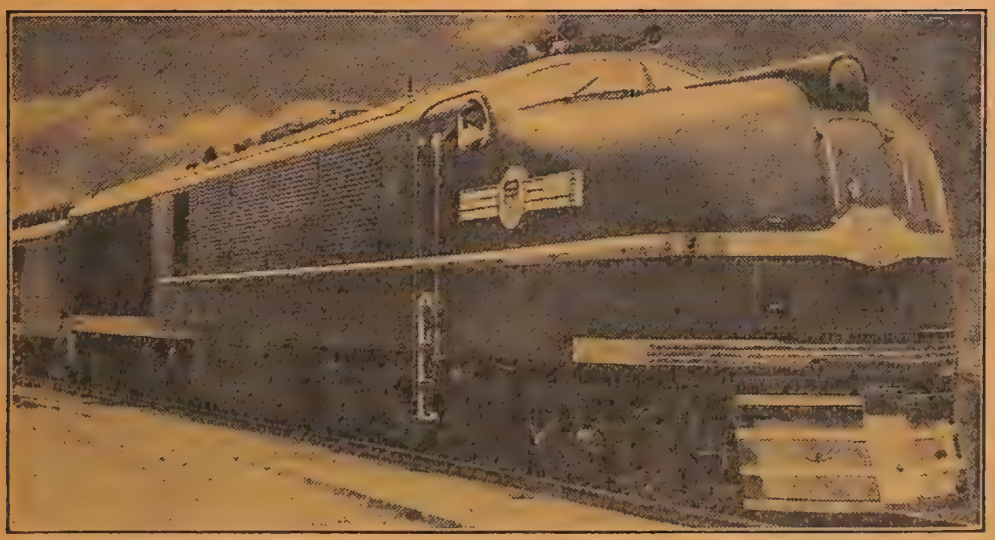
The "Forty-Niner" Is an All-Pullman Steam-Powered Streamliner Operating over the Same Route between Chicago and San Francisco as the Diesel-Powered "City of San Francisco". Trailing Weight of the Former Is 661 Tons, Against About 800 for the Latter, but Operating Costs Are 74 Cents a Mile, Against $1.57 for the Diesel-Powered Train

facturers, are building Diesel switchers tells the story pretty well.

This does not mean that no more steam switchers will be built. They are still cheaper to buy, and are superior for service which demands lots of power at speeds above ten miles an hour. But if everything else were even, it still would be pretty impractical to work them 24 hours out of 24 for the reason that time must be allowed for cleaning fires and taking on fuel; and rather than have the crews doing nothing while these are being performed, a railroad works a steamer only two straight shifts, and allows it two to ten hours layover, depending upon the particular setup.

In main line service, which has brought the Diesel so much glory, the case is not so clear, even if many Diesels are being sold. After five years of noisy attack on the citadel of steam, and for all its visible accomplishment, the Diesel can claim only two points of solid superiority. One is that it is somewhat easier on the track than a reciprocating steam engine, and the other is that it does not have to stop so often and so long for fuel and water. A third argument, that it can accelerate at a swifter rate, is rather nullified by the fact that a steamer designed to haul the same train at the same average is livelier in the higher speed ranges: it can, for instance, outdistance the Diesel in bouncing back from 40 to 90 or more miles an hour, a characteristic manifestly of more intrinsic worth in high speed running than the ability to warm up to 30 or 40 miles an hour in a hurry. Moreover, a booster-equipped steamer not overloaded (with no more than three times its weight behind it) is livelier at low speeds than even railroad men are inclined to give it credit for being.

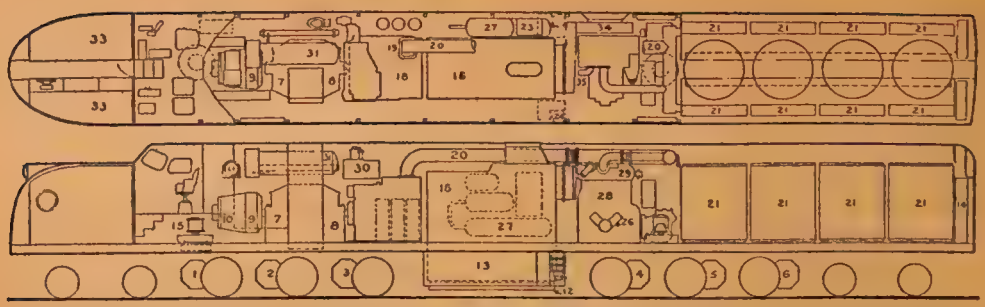
ON ALL other points, apparently, steam can fairly repulse the



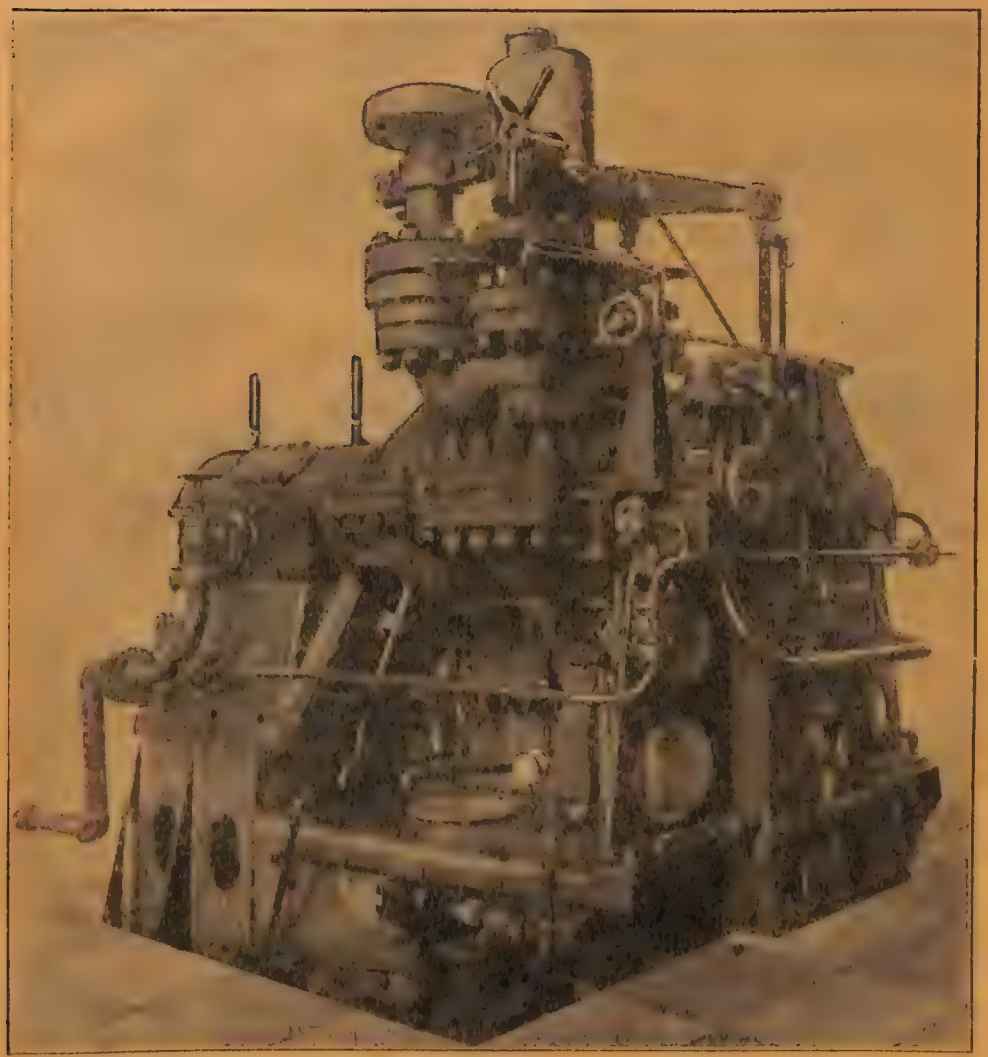
Latest Counter-Challenge to the Diesel-Electric Is the Steam-Electric Locomotive, In Which a Water Tube Boiler Generates Steam at 1500 Pounds Pressure for Turbines That Run the Generators Powering the Motors. This Is One of Two 2500-Horsepower Units Completed Recently by General Electric for the Union Pacific, on Whose Line They Will Pull a 12-Car Standard Train, in Chicago-to-Coast Service, over Grades of 2.2 Per Cent, without Helper. Each Unit Weighs 530,000 Pounds, Exerts About 75,000 Pounds Tractive Force, Can Travel 125 Miles an Hour. Chief Advantages Are Those of the Diesel-Electric (Because of a Condenser It Can Run 500 to 700 Miles without Taking Water); Chief Disadvantages Are High Cost (About $650,000) and Weight and Complexity. Diagram, with Photo of Power Plant, on Next Page

Diesel-electric. This is convincingly if perhaps unwittingly demonstrated in a recent booklet issued by Coverdale & Colpitts, Wall Street consulting engineers. The pamphlet, entitled *Report on Streamline, Light-Weight High-Speed Passenger Trains,* analyzes the operations of many of the newer flyers, breaking down the costs in such a way as to afford an illuminating though not consistently accurate comparison of the relative merits of steam and Diesel engines in passenger service.

The thing it most immediately makes clear is that type of motive power has nothing to do with physical attractiveness or general sales appeal of the train itself—provided of course that it is drawn fast enough to make people want to ride it. The transports averaging the highest gross revenues per mile are handled by streamlined steam engines: The *Daylight* of the Southern Pacific and the *Hiawatha* of the Milwaukee Road, the former taking in $4.63 for every mile operated during the year ending with June, 1938; and the latter $4.34 during the same period. Both run in the daytime. The highest gross among sleeping-car trains taken up in the report is shown by the Diesel-powered, streamlined, 14-car *City of San Francisco,* which averaged $4.19 per mile during the first half of 1938. However, the steam-powered *Twentieth Century Limited,* omitted from this report, is doing nearly as well as this; and the Central's *Commodore Vanderbilt,* an unstreamlined, standard Pullman and coach train, probably does better. Patently, the argument is unscientific and inadequate from any point of view; but it has been used so much, even lately, that it deserves to be punctured again. The American or any other people, probably, will flock to ride behind a thrashing machine if the cars are to their heart's



Side Elevation and Floor Plan of a Single (2500 Horsepower) Unit of the Union Pacific's Steam-Electric. Key: 1-6, Traction Motors; 7, 8, Main Generators; 14, Battery; 16, Boiler; 18, 19, Turbines; 21, Air-Cooled Condensers; 27, Feed Water Heater; 30, Compressor; 33, Raw Water Tank



The Steam Turbine and Gear (Nos. 18 and 19 in the Above Diagram)

Photo by Alfred Haij, 1445 S. Hayworth Ave., Los Angeles, Calif.

The Diesel-Electric "City of Los Angeles" Arrives in Los Angeles at 8 a.m., 15 Minutes before the "Daylight", Steam-Powered Streamliner, Leaves for San Francisco, Affording a Chance to See Them Side by Side. The Diesel Shown Above, However, Is the Original 2100-Horsepower Engine, Which Was Inadequate to Haul the Extra Car Added to the Train, and Has Been Replaced with a 4000-Horsepower Locomotive. There Are Now Two "City of Los Angeles" Trains: This One with Ten Cars and a Two-Unit, 4000-Horsepower Engine; and the Later One, with 13 Passenger Cars, One Auxiliary Motor Car, and a Three-Unit, 5400 Horsepower Locomotive

desire and they are wheeled swiftly enough.

The booklet also retails some figures on maintenance and repair costs of the high-speed units, which, if approached with any objectivity, can hardly be construed as tendering the Diesel any kind of an edge in this matter. For instance, the 14-car *City of San Francisco,* with its three-unit, 5400-horsepower Diesel engine, costs $1.57 a mile to operate, not including interest depreciation, taxes, or dining car losses; and of this high figure (the highest among American passenger trains), repairs alone require 77½ cents. In the case of the similar *City of Los Angeles,* they demand 80 cents a mile. Presumably this includes maintenance on the cars; but even so, maintenance charges on the steam-powered *Daylight,* also a 14-car train, come to only 38 cents—28 for the cars and ten cents for the big 4,500-horsepower, 4-8-4 type steam engine. And while total operating cost of the *Daylight* is set down as $1.40 a mile, this includes 29 cents a mile for an item called "train supplies and expenses," which is accorded less than ten cents on the *City of San Francisco,* obviously because it is mostly Pullman and the train supplies and maintenance therefore are mostly up to the Pullman Co.

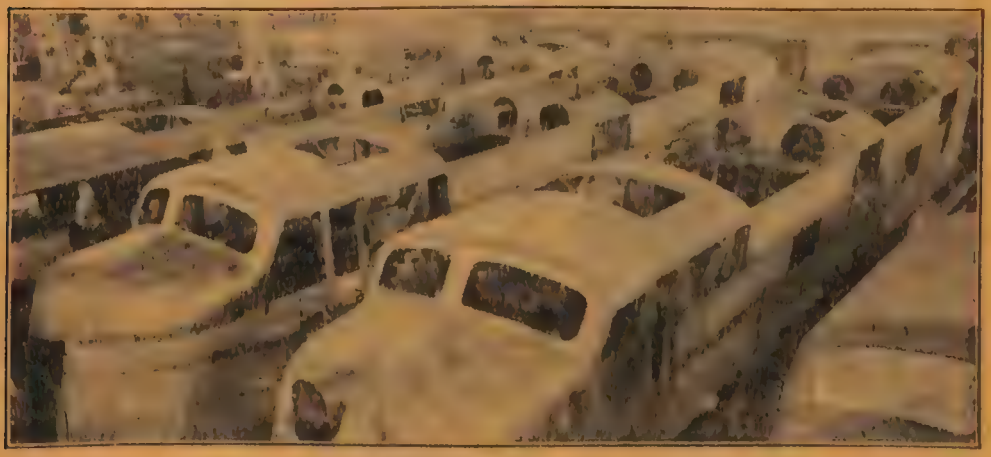
In other words, though the 14 cars of the *City of San Francisco* and *City of Los Angeles* weigh only fifteen per cent more than those of the *Daylight,* maintenance and repairs on the engine are at least four times those of the steamer. And when car expense is deducted from each, operating cost of the steam-hauled train is 83 cents, whereas that of the Diesel-hauled train is about $1.30. True, these two are not exactly of a weight, nor are they run at the same speed. The *Daylight* averages 48.3 miles an hour overall, and the other train averages 56. On the other hand, while both encounter heavy

A Big Triumph for Steam Power Is the Splendid Performance of These Atlantic Coast Line 4-8-4 Type Engines, Which Haul as Many as 21 Standard Cars (1600 Tons) from Richmond to Jacksonville, 661 Miles, in 705 Minutes

grades en route, a much greater proportion of the *Daylight's* total is hilly and curved. The cars of the *Daylight* weigh 712 tons, and those of the *City of San Francisco* weigh 832 tons; and perhaps this is the only inequality which has a notable bearing on the comparison.

Looking for units whose speed and size are practically identical, we note at once two excellent examples. These are the two eight-car streamliners of the Baltimore & Ohio-Alton between Chicago and St. Louis, running on the same tracks, at about the same speed, of the same weight and seating capacity. One, the *Abraham Lincoln,* is handled by a Diesel; the other, the *Ann Rutledge,* by a home-made steam engine. Total train expenses for the latter are 97 cents a mile; for the former, 94 cents a mile. This is so close that no man equipped with extraordinary ability in allocating costs would care to give either one an edge. And this does not include the difference in fixed charges on the locomotives—of which more later.

Another chance for a reasonably accurate comparison is offered by the Diesel-electrics between Chicago and Denver and the Milwaukee Road's *Hiawatha* between Chicago and the Twin Cities, of about the same size and weight, and operated at about the same speed (the *Hiawatha's* overall average is less, but it stops longer and more frequently, and hence average running speed is about the same). The Coverdale & Colpitts report, not being consistent in the classification of costs, shows a curious if not astonishing dis-



Constructing the Seaboard Air Line 6000-Horsepower Diesels in the Plant of the Electro-Motive Corporation at La Grange, Ill.

Last October 16 the Chicago Chapter of the R&LHS Sponsored a Railfan Excursion to the Shopton, Iowa, Shops of the Santa Fe, Which Assigned Its Streamlined 4-6-4 (No. 3460) to the Special. At Toluca, Ill., Everybody Got Out and Photographed the Diesel-Powered "Super Chief" (on the Left) as She Sailed Through at 85 Miles an Hour. Ten Minutes Before This They Snapped the Westbound "Kansas Cityan"

crepancy in the train expenses of the *City of Denver* of the C&NW and Union Pacific and the *Denver Zephyr* of the Burlington. Those of the former add up to $1.06 a mile, while those of the latter are put down at 62 cents. This seems to indicate that Diesel engines don't perform so well on UP tracks; for while the UP allows 55 cents a mile for "repairs," the Burlington records only 21 cents a mile for "power plant and train maintenance" —despite the fact that its power plant is a 3,000-horsepower affair, as against 2,400-horsepower for the *City of Denver*. Or it may be that the respective methods of book-keeping for publication are different. At any rate, the *Hiawatha* train expenses are $1.16 per mile. This includes 50 cents a mile for engine and car repairs, as against 55 cents for the UP, who presumably has not deliberately exaggerated the Diesel costs.

During this winter the war has spread to another front. In the Southeast, the Atlantic Coast Line and the Seaboard Air Line, in announcing 26¼-hour trains between New York City and Miami, have chosen different types of motive power. Between Richmond, Virginia, and Florida points, their swiftest trains are on about the same schedule: the ACL, for instance, allows its *Florida Special* 705 minutes for the 661 miles between Richmond and Jacksonville, and the SAL dispatches its *Orange Blossom Special* over an equal distance in about the same time. The trains, consisting of standard equipment, are heavier on the ACL—as many as 21 cars.

But whereas the SAL is using a 450-ton, 6,000-horsepower Diesel (*Railroad Magazine,* Feb., 1939) which cost between $550,000 and $600,000, the ACL does the trick with its new

Photo by P. B. Korst Jr., 209 Clark St., Janesville, Wis.

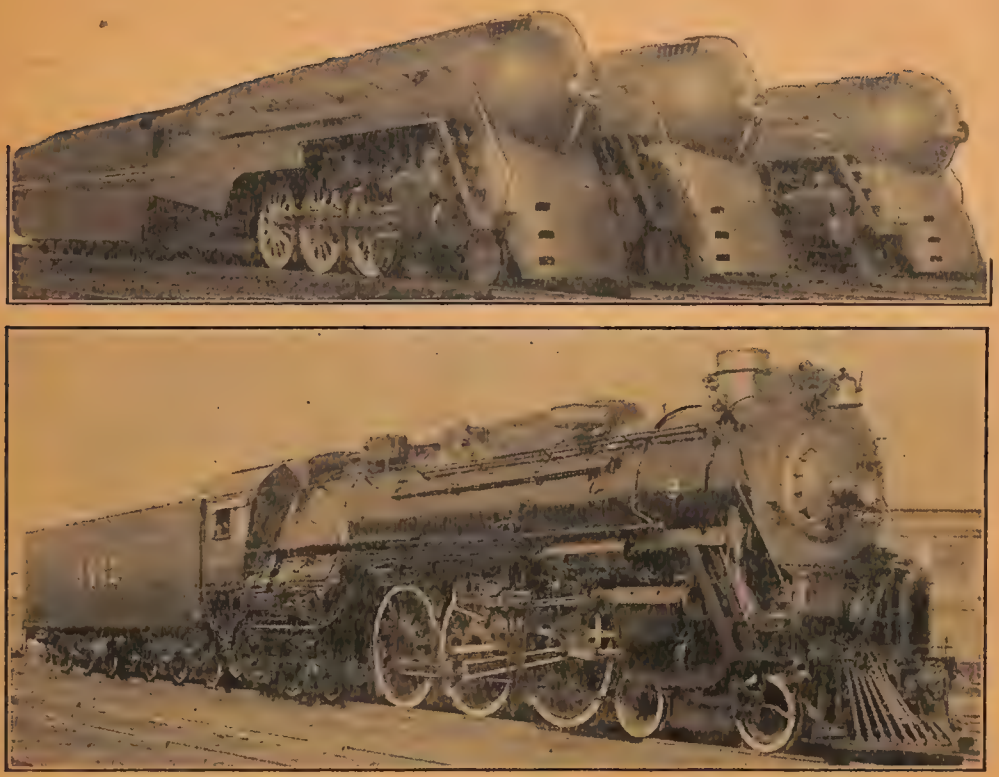
The Burlington Keeps a Streamlined Hudson Type Steam Engine Handy to Pinch-Hit for the Diesels When They Have to Be Held out of Service. Here Is That Steamer, Somewhat Appropriately Known as the "Aeolus", Hauling the "Twin City Zephyr"

5,000-horsepower, $150,000 4-8-4 type steamers, weighing about 400 tons with tenders two-thirds full (these tenders are the world's heaviest, with a capacity of 27 tons of coal and 24,000 gallons of water).

What the Coverdale & Colpitts report did not mention is an item which is quite important, since it exists whether the trains are used or kept in the shops. That item is fixed charges: depreciation, taxes, and interest on the investment. In all the cases we have mentioned the Diesel cost three to four times as much as a steamer of equal capacity. If we assume that both types of power can make the same average daily mileage, the ten per cent which must be allowed for fixed charges gives the steam locomotive an advantage of from five to 16 cents a mile. Of course, if the average steam mileage is less, the margin must be reduced proportionately.

MOST of the points discussed here were taken up in a paper delivered by E. E. Chapman, mechanical engineer of the Santa Fe, before the Metropolitan Section of the Society of Automotive Engineers in New York City last October, and reprinted in *Railway Age* a month later. Mr. Chapman's thesis, a discreet, sober, piece of reporting, verifies what the Coverdale & Colpitts report indicates: the Diesel's advantages are in easier riding, distance it can travel without refuelings, and in addition visibility for crews. On a car-mile or ton-mile basis, he says, repair costs are "considerably higher," but might be less than on steamers operated in the same service. Fuel cost differences, of course, are not great. Though the Diesel uses a third as much oil, the oil must be of higher quality and so is nearly twice as expensive per gallon.

When he compares the steam and Diesel engines on a horsepower and weight basis, however, Mr. Chapman doubtless unintentionally becomes a little less scientific. In the first place, calling attention to the fact that the Santa Fe's new 4-6-4 (of 4,300 indicated horsepower) and 4-8-4 (of



One Horsepower Is Defined by All Engineers as the Energy Necessary to Lift 33,000 Pounds One Foot in One Minute (Or One Pound 33,000 Feet in One Minute), but Nobody Seems to Agree When It Comes to Assigning Horsepower Ratings to Steam Locomotives. The 4-6-4's of the New York Central (Upper) Are Rated as High as 4700 Horsepower, While the Santa Fe's 4-6-4's, Considerably Heavier and More Powerful All Around, Get Only a 4300-Horsepower Ranking; and the ACL 4-8-4's, (Page 19), Only 4200. Might Be a Good Idea for the Steam Engine Manufacturers to Agree Upon a Common Standard, at Least for Publicity Purposes

5,750 indicated horsepower) engines pull the fastest train on the road if necessary, he creates the impression that a 3,600-horsepower steamer could not do just as well as the 3,600-horsepower Diesels which handle said train, but that it is necessary to use bigger steam engines for the job.

This is completely disproved by the 4-4-2's which haul the *Hiawatha* and by the performance of the New York Central's Hudson types. Moreover, his horsepower ratings give the benefit of the doubt to the Diesels. As all mechanical men know, the actual horsepower delivered by a Diesel rated at 3,600 is more apt to be a maximum of around 3,000, due to transmission losses, whereas a steamer with an indicated horsepower of 4,000 may not only show that, but in actual tests surpass it. For instance, the New York Central Hudson type locomotives, which are eleven per cent smaller and use a lower boiler pressure than the Santa Fe's so-called 4,300 horsepower machines, have indicated 4,700 horsepower at 80 miles an hour.

But what seems almost downright carelessness is that Mr. Chapman has included the fully loaded tender when comparing the weight per nominal horsepower. Obviously, if the tenders on the Santa Fe engines were full all

the time, no tenders would be necessary. Therefore it seems fair to appraise the weight of tenders on the assumption that they average about two-thirds full. If so, his 4-6-4 and 4-8-4 type locomotives come to 35 or 40 tons less than he says they do; and their weight, per indicated horsepower even, is less than that of the Diesel per nominal horsepower. In fairness to Mr. Chapman, steam engine builders themselves do not deduct anything from the burden of the loaded tender; but it manifestly is such an elementary consideration that it doesn't seem unreasonable to ask that it be observed in a comparative report.

In the matter of small, swift units, the report by Coverdale & Colpitts makes the Diesel look pretty good. Trains like the Rock Island's *Rockets*, the *San Diegan* and *El Capitan* of the Santa Fe, and the Burlington's smaller *Zephyrs*, are being operated for 46 to 60 cents a mile; and until a small streamlined train powered by a small steam locomotive makes its appearance on the rails, the Diesel can claim this victory without having to fight.

And so the battle goes. In many ways, it is a very deceptive one. The vast bulk of all motive power is freight locomotives, which are steamers. There are rumors to the effect that this stronghold may be attacked at some future date. To tell the truth, the Diesels, because of high tractive force in the lower speed ranges, are better suited for freight than passenger trains.

But unless the total operating cost of Diesels will have been reduced drastically, the advantages they now possess in fast passenger service hardly will be sufficient to make them successful. Moreover, the facts uncovered in this article, and the record of steam engines in high-speed service (as displayed in last month's issue of RAILROAD MAGAZINE, in the tabulation of mile-a-minute runs), do not make ridiculous the conclusion that the Diesel isn't likely to make a clean sweep of passenger trains. And, what perhaps is most relevant, they provoke speculation as to what would be happening if General Motors were building steam engines.

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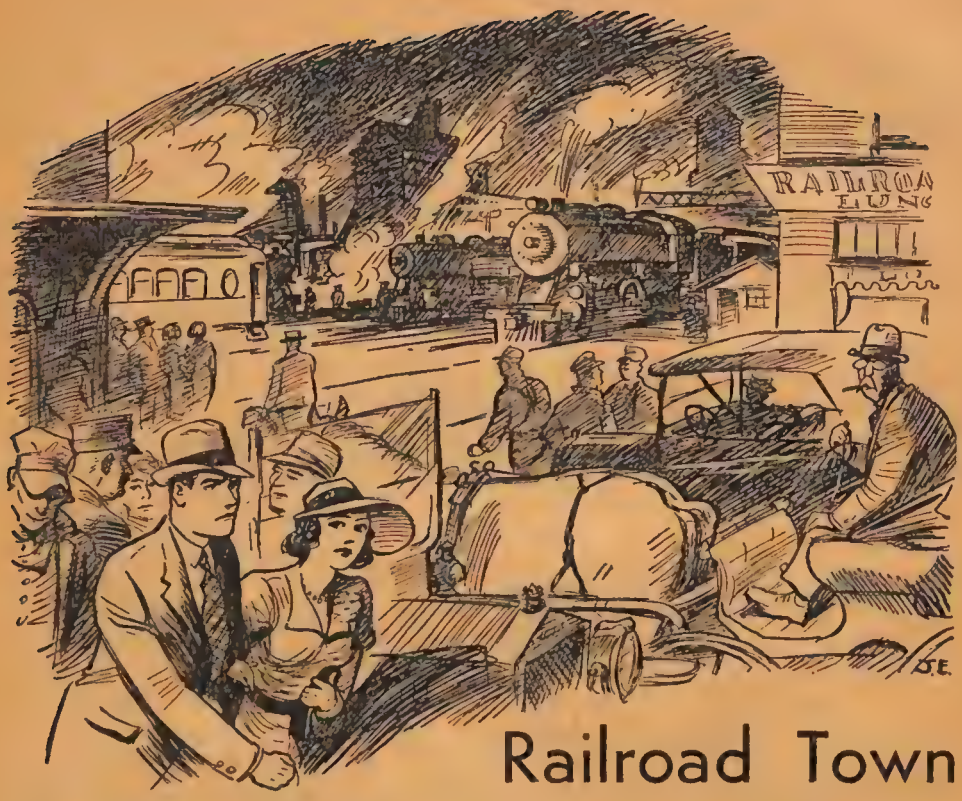
Don't wait! Ask your druggist for Doan's Pills, used successfully by millions for over 40 years. They give happy relief and will help the 15 Miles of kidney tubes flush out poisonous waste from your blood. Get Doan's Pills. (ADV.)



Railroad Town

The Younger Railroaders Understood What the Gray-Headed, Stooped-Shouldered Veterans Had Fought for. But They Understood It Not Half Clearly Enough

By BLANCHE MOSLER

EVEN a deaf man looking toward Cedar City from a distance would have known it was a railroad town, with its dark pall of smoke forever drifting up against the sky, its drab roundhouse squatting possessively in the valley, and its long lines of steel rails, here and there catching the glint of sunlight, stretched interminably to the north and south.

Not, of course, that there weren't other families besides railroaders living in Cedar City. There were mill hands, merchants, clerks, and the usual sprinkling of professional men, all with their women and children. But the truth is that the size of the incomes of those other people depended largely upon the payroll received by the men in overalls.

The fortunes of Cedar City, almost as far back as its oldest inhabitant could remember, rose or fell according to the fortunes of the men who ran

the great steaming engines and the men who, emerging with lunch pails and greasy overalls from the roundhouse at quitting time, overhauled those same great engines. And that included "Snowball," the colored roundhouse helper, who swung out of that ugly circular building, when the whistle blew, with a certain pride as if he sensed that he was part of something vital, something that mattered tremendously.

And Sam Fuller, the spic and span Negro chef who caught the lowest step of the diner with the agility of a cat and was always wearing his snowy-white jacket—well, Sam was a man of importance, too. Not that he was a railroader in the strictest sense of the word. But every time *The Silver Lance* pulled out of the depot in that silky purring way it had, with Timothy McKee at the throttle, Sam could be seen resplendent and beaming as he waved a dramatic farewell to some colored belle, the farewell being a careful imitation of the conductor's highball. Mostly he waved to a slim, oval-faced mulatto who needlessly used preparations for straightening the hair and further prettied herself with vivid crimson lipstick and rouge. "A classy yaller gal," the switchman termed Susie Johnson, sometimes with more secret admiration than they would have cared to admit.

Yes, Cedar City was a railroad town all right, boasting that peculiar hum of activity which characterized division points on a trunk line. Perhaps it was on a Saturday night that a newcomer viewed it to best advantage. Then all the stores were open late, and everybody — at least everybody who amounted to a row of pins—could be seen at some time during the evening strolling leisurely up one side of Main Street and down the other.

And the railroad even set its mark so to speak, upon these Saturday night jaunts, because when you walked in that careless almost sophisticated manner up the brightly lighted Main Street, it was the thing to proceed as far as the depot; then across the street and turn around and go back down the other side. By following this itinerary, you managed to see every shop window in town, as well as every one of the Cedar City citizens who might be sitting comfortably in parked automobiles along the curbings of Main. By the time you reached the depot, there really wasn't much else to do but to turn around, for at this point the tracks completely cut off that end of town and there was nothing on the other side but dirt road and trees curving like a long green snake following the river.

Even the more prosperous residents, those who owned automobiles, followed this route set down by those who only walked. Important citizens, they drove slowly with a studied carelessness, one hand resting easily on the steering wheel, the other free to wave a neighborly greeting here and there as they moved along Main.

Upon any Saturday night, on turning around at the impressive depot with Cedar City printed on each end of it in large black letters, and about which beds of red and yellow cannas were planted each year to give the station a neat look, the townsfolk could hear the hissing steam that surged out of stubby smokestacks, and see the bright lanterns of the switchmen waving back and forth along the rails.

ON a Saturday night in late August of 1916, Doc Peters, guiding his mare through Main Street traffic, chanced to see Terry Collins and Terry's girl, Katherine Warren, at the

precise moment that he had been thinking about them. Terry, his arm linked in Katherine's, was going into Smasher's Drug Store, where every boy and girl in town knew you could get the best ice-cream sodas.

Terry Collins was a tall, handsome, Irish lad whom "Speed" Warren had taken in years before and treated as his own son after Terry's father, an engineer, had been killed one stormy night on that fast freight headed south. Old Charlie, like Speed, had been one of those hard-working, hard-fighting railroaders; the sort that had made the Brotherhoods what they now were by battling inch after inch, fiercely and stubbornly, for their rights: men who regarded their organizations as something almost sacrosanct.

At times, through the difficult years of the long hard struggle, old Charlie and Speed had come face to face with the threat of strikes, and then, as a matter of course, they had prepared to climb down from the mighty engines, forgetting work, pay, everything in the world but their ideals—keeping the Brotherhood intact. "No break in the ranks anywhere along the line," had been the ringing cry of the fellows then; and there seldom was. A railroader who didn't stick to his brothers, was, as any of the ancient generation would tell you bluntly, "a damned scab." Old Charlie, fortified slightly with a drop of real Kentucky, could spit out a wad of tobacco and hiss that awful epithet until any one within hearing would realize he meant it.

"Railroadin' " had come a long way since then, with better pay and better working conditions: blessings that the younger generation of railroaders, like Terry, were somewhat inclined to take for granted. They understood in a way, but not half clearly enough, that it had been the veterans, now stoop-shouldered and with graying hair, who had fought for all this.

And so in the summer of 1916 the Brotherhood was still fighting, reaching out for an eight-hour day, which had in the beginning been only a far-away dream. During the long dragging days, Cedar City had grown tense . . . waiting. Doc Peters, watching Terry and Katherine walking into Smasher's Drug Store, sensed the tautness even in the Saturday night bustle. Threat of a strike hanging over a railroad town was a serious thing. Only the day before, President Wilson had taken a hand in the matter, so grave had it become; but even his appeal both to employers and men had resulted in no agreement. The labor leaders had gone on with plans for a general strike, and an order had been sent out that after seven o'clock on the morning of September fourth no freight or passenger trains would run.

Doc Peters was too far away to observe the troubled frown etched between Terry's fine gray-blue eyes, but Katherine could see it: Katherine, a tall, lissome creature with shining red-gold hair and brown eyes, who adored Terry with a devotion that even he hadn't gaged sufficiently.

This night it seemed to Terry that all of life was against him. Perched on a high stool at the fountain at Smasher's, he was thinking how, a few years ago, he had followed in Speed's footsteps and old Charlie's. As callboy and engine wiper, he had labored patiently; dreaming, as his father and Speed had likewise dreamed when they were youngsters, of the day when he would start "firin' "; of the day, still further in the future, when he would be an engineer, proud and confident, with a steady run.

ONLY this summer Terry had been promoted to firing for "Tipsy" McKee, an ancient cuss who could hold his liquor and thunder along on one of the giant road engines with the best of them. Terry now was making pretty good money; enough, he figured—in dreaming a bit on the swift-passing miles when he shoveled coal into the firebox and only half-listened to Tipsy's comments in the cab—to marry Katie Warren and have a home and family of his own.

Now, due to the threat of the big strike, the dream had just about taken wings and flown away. His fine lean shoulders slumped a little, while his mouth had taken on that petulant look it wore whenever he was defeated in something he had set out to do. It had done that ever since he was a small boy. There was no laughter on his lips this night, none of the mischievous twinkle in his eyes that was so much a part of Terry Collins.

"What's wrong, Terry?" Katherine asked finally, knowing well enough what was wrong. She didn't look at him, but watched instead the soda jerker, Timmy Sanders, who was concocting a chocolate nut sundae with the precision and exactitude of a veteran.

"Oh, nothing," said Terry.

"But there is," she persisted.

"Nope, just tired." In a moment he lapsed into his former reticence.

"Let's not bother going to the movies tonight, Terry."

"All right."

On the way home, as if Katherine didn't know it already, it had all come out like some pent-up torrent tumbling at last over the dam.

"It's the strike," he said bitterly; "that stupid strike. It's set at last for September the fourth. Well," he turned and looked straight at the girl beside him almost angrily, "I'm not going out!"

Katie, feeling suddenly hurt, disappointed there in the darkness, was silent.

"I'm not," the boy went on hurriedly, "going to give up my good job. Why, good Lord. Katie, I've *worked* to get where I am. I've slaved in that roundhouse and done lots of things I hated so that some day I'd be on an engine with a regular run. Well, I've got that run now and no damned silly strike is going to take it away."

So intent was he on what he was saying, he hadn't noticed until later that Katherine's slim hand had slipped from his, that she had moved farther away from him.

"Why," he continued impatiently, "it's only now that I've got a job decent enough that I felt I could ask Dad if we could be married." Terry always called Speed "Dad," as he used to call his dead father, old Charlie.

Katherine, conscious of the moon filtering through the leaves and making dancing patterns on the white sidewalk, said: "There were a lot of things Dad hated, too, Terry." Then lifting her head proudly, she added, "But Dad will be going out when the time comes."

Turning from Main at Seventh Street they were in the block of neat frame houses where the Tipsy McKees lived, the yellow paint of their cottage looking white in the moonlight. A single light was burning in the back part of the house.

A few doors farther on, they passed the home of Sally McGuire, Cedar City's best milliner, who made a trip to St. Louis twice a year to find out the latest in fashions in ladies' hats; and following such journeys made sea-

sonal bonnets for all the well-dressed women in town, which were, as Tipsy McKee phrased it each time his wife wore one, "Pretty lousy." Miss Sally's house was quite dark. It being Saturday night, she was still downtown in her shop known to her clientele as the "Bon Ton."

PASSING the milliner's little house made Terry remember something that had happened in the roundhouse that afternoon.

In that impersonal semicircular world that was made up of tracks and locomotive stalls, he had run into old Jeremiah Letmate, just in from the north. Jeremiah, climbing down from the engine a trifle wearily, had found Snowball, the colored helper, at his side grinning. Jeremiah, who used to be from "up the line," but wasn't any more, paused to mop perspiration from his grimy pleasant face with a flaming red bandanna.

Because of seniority, Jeremiah had very cheerfully "bumped" old Windy Flint, and now Jeremiah lived in Cedar City closer to Miss Sally, the milliner, whom some said he was going to marry if he ever had time to get around to it. The old engineer, in the midst of humming his favorite tune "Casey Jones," had grinned back at the Negro.

"What's up?" he had inquired of Snowball as the helper showed his flashing white teeth. Then spying Terry, Jeremiah had boomed out: "Hi there, lad, how's railroadin'?"

And Terry had returned morosely enough, "Guess it's going straight to the devil from the looks of it." Then, almost curiously, he had asked, "How do feel about giving up your run?"

Old Jeremiah had regarded him with a very odd expression in his tired eyes and had answered: "That's a fool question to be asking an old-timer like me, boy. Hell, yes, I'll be giving up my run!" Trying to straighten his drooping shoulders, he added: "Only I won't be losing it. The Big Four doesn't lose strikes."

Turning from Terry, Jeremiah had called out to the foreman: "Hey there, Shorty, make sure you check that valve before I go out again, or do you want me to be blowing my old head to smithereens?"

Then, putting the flaming bandanna very carefully into his overalls' pocket, he had turned back toward Terry, had slapped him on the back, a good stiff thump, with his old thickly-veined hands, and had gone off bellowing "Casey Jones"—in fact, had sort of swaggered off: "Put in your water and shovel in your coal, put your head out the window watch them drivers roll," the tune sweeping through the roundhouse like something fresh and young and filled with promise.

They were all like that, the old line of railroaders. Valiant runners who raced giant motive power over the length and breadth of the country; grime-covered, practiced hands tense and sure on myriad throttle levers.

And old Tipsy McKee, when he and Terry had coasted into the station on silky purring wheels the night before, had said: "Wilson's a fine President, all right, all right, and a true friend of the workin' man. He'll fix things right." And as *The Silver Lance* was slowing down to a stop, Terry heard the old man say, above the hiss of steam puffing out through the huge drivers: "But if it comes to the worst, you can tell the world I'll not be taking this lady out for another airin'!" Incredible finality had been in Tipsy's rich Irish voice.

Terry, however, hadn't been able to view it the way the old fellows did, and with both Jeremiah and Tipsy he had gone away feeling angry and cheated. "I won't quit," he had told himself; "I won't!"

Now, walking stiffly beside Katherine, he knew that everything, everybody was against him.

It was quiet on Seventh Street, and suddenly through the stillness came the insistent call of a locomotive whistle. "That's Dad's whistle," said Katherine, sighing as she spoke.

A distinctive one it was, and some said that only Speed Warren could make an engine whistle sound like that. To Terry it sounded warningly, accusingly; and over and above that, wistful and lonesome. He could almost see Speed in the cab as he slowed down for the crossing. Usually he had been glad and a bit relieved when he had listened to that crossing whistle, but not tonight. He would rather have seen anyone tonight than Speed Warren.

IMPRESSIONS, snatches of conversations, continued to crowd into his mind, confusing him and irritating him. Susie Johnson, that pretty mulatto, swinging along beneath the cab window the night before, her slim yellowish arm linked in black Sam's as the dining-car chef made his way toward "Darkie Town," carrying the little satchel of soiled jackets that Susie would turn snowy again before the next trip on *The Silver Lance.*

"Yo sho nuf gwine be embarrassed, boy," Susie had said to Sam Fuller.

"Now why you talk in riddles?" the chef had retorted, amiably enough, as he nodded up at Tipsy who gave him a slow understanding wink.

"Well," observed Susie, "you is railroadin' and yet not railroadin'. What is yo gwine do about de strike?"

"I'm sure in a predicament, honey," Sam confessed, with a less pronounced Southern dialect than hers, due to his extensive traveling and his contacts with a wide variety of people. "In a way, I'm hooked onto the back end of the railroad, but I ain't exactly workin' for the railroad."

"If de front end of de train goes on a strike," the mulatto girl reasoned, "what is yo back end gwine be doin'?"

"Well," said Sam with an air of decision, "the rear end ain't pullin' out if the front end is run by anybody but Mistah McKee—that is, it ain't pullin' out with Sam Fuller on board."

The man handling baggage along the platform getting out of their way, Sam and Susie had moved off, out of earshot of Terry Collins. Passengers alighting from the coaches had come up and taken their places; until they, too, in time, went away around the corner of the depot, on down Main to find Cedar City's best hotel, The McFarland.

The last person to pass beneath the cab window, the night before, was a thin, little, rat-faced man who moved with a furtive and almost apologetic tread. A man who, Terry had reflected watching him, appeared somehow to belong to solitary, shadowy places. A man who would, if he could avoid it, not quite meet your own direct glance; would edge away from too-bright lights and fade out into the darkness.

And Tipsy, seeing the man as he brushed in front of the locomotive pilot like a flitting gray shadow, had remarked: "If it hadn't been for damned scabs like that one, the shopmen wouldn't have lost their strike. Well, they've had to work like hell ever since, but the trouble is that the honest boys have had to suffer along with the guilty."

Tipsy had shifted his wad of tobacco carefully from one cheek to the other. Then he had added: "Guess we'll call it a day, Terry. Wonder what my old lady's got for supper tonight. Mother sure can make punkin' pie!" None of this had been a question. Only Tipsy's usual tiresome comment.

Across Terry's remembrances of the night before, Speed Warren's whistle came again. This time, it seemed to his son, it asked a question, and after the question had soared over Cedar City, it died away into the distance reluctantly as if waiting for an answer.

THE short days passed. Jeremiah Letmate made his long trip north and back twice. Speed Warren's crossing whistle on the home stretch rang out twice in its usual plaintive way, while twice Tipsy McKee, Terry, and Sam Fuller brought *The Silver Lance* back from strange and busy places. And then came the night of September the third, with light misty rain and a cool wind that hinted of autumn.

Leaning out of the high cab window, Terry watched with sullen eyes the passengers hurrying off down Main, and watched, too, with a queer feeling in his heart, as the baggageman unloaded a casket from the baggage coach, and left it on one of the trucks; an eerie, lonely thing awaiting its remaining journey on some outbound train—if there would be any outbound trains.

"Guess the President couldn't fix things up," Tipsy was booming out from the other side of the cab. "Did his best, though. A fine man, President Wilson!"

At the very moment that Tipsy spoke and Terry listened sullenly, the President was standing, like them, and waiting. Waiting on Congress.

Again the rat-faced runt scurried by the engine, merging like a shadow within the other shadows of the night. For a full second of time he lifted his drooping eyelids and stared straight at Terry, before passing on.

Later, Miss Susie Johnson and her "railroadin'" man promenaded along the platform. The slender, oval-faced Susie, walking in her usual swing-of-the-hip way and wearing a scarlet dress, seemed like a sudden bright flame in the mist. Their voices carrying over to Tipsy, Mr. McKee leaned out the cab window beside Terry and hailed the chef:

"Well, Mr. Fuller, how in the hell do you think the rear end of this wreck can pull out on the next trip? Maybe you can get out and push from the back."

Susie looked up at Tipsy then, smiling in that half-insolent manner of hers, but Sam drew himself up proudly and replied: "If folks go out on my end of the train next trip, Mistah McKee, they'll have to bring their own meals, 'cause I'm havin' a one-man strike, startin' tonight."

Tipsy guffawed at that, while Sam and his "yaller gal" drifted off into the darkness.

Still later, as Tipsy ran the engine of *The Silver Lance* into the roundhouse, he said: "Well, boy, this seems to be the place where we get off"; and he roared with laughter again, evidently thinking of loyal Sam Fuller and his one-man strike.

But Terry Collins didn't laugh. Although it was against the rules, he didn't even bother to make out his time slip for that trip; nor did he return Snowball's cheerful greeting. Before he left the roundhouse, though, he noticed that Snowball handed Tipsy a rabbit's foot, saying as he did so: "Dey sho

nuf bring folks good luck, Mistah Tipsy"; and Tipsy holding up the talisman and regarding it critically observed: "Thanks, Snowball. I need it."

THERE was company for supper that night at the Warrens'; and Katherine's supper was almost like Sunday dinner, with baked chicken and all the trimmings. Jeremiah Letmate and Miss Sally sat side by side, Sally's bright black eyes darting here and there like a tiny bird's while she looked archly from time to time at Jeremiah.

Tipsy McKee and his old lady were bickering pleasantly over some trifle which Mrs. McKee sniffed didn't amount to a "hill of beans" only Tipsy wanted to make something out of it. And Terry, sitting beside Davy Warren, Katherine's young brother, watched Katherine, who was not sitting near him tonight as she used to do, but was staying close to Speed.

Terry, eating Katherine's chocolate nut cake absently, was thinking: "We're to go out on strike at seven in the morning, unless they telephone us not to."

He looked at Katherine's red-gold hair and her pale lovely face across from him, and it seemed to him that everything he had ever worked for and wanted in the world had gone from him. He knew Katherine couldn't see it the way he did. As for Speed, they hadn't discussed the strike at all, but something in Speed's eyes when they looked at his son made Terry sure that Speed had heard. Terry, staring toward the telephone, wondered why the cold lifeless thing couldn't ring. If it only would . . . if it only would!

Dinner over, Katherine didn't go to the kitchen to wash the dishes. Instead, she got her crocheting and remained in the parlor with the others. Her fingers moved quickly, the needle making little flashes of silver light.

Suddenly it came to Terry that the cheerful talk at supper had faded away into silence without his being aware of it. He saw Jeremiah Letmate in one corner of the room, smoking a pipe, with a meditative, anxious expression on his tired old face. A clock on the piano ticked off the minutes loudly, while Terry felt as if he were being swept on against his will toward the edge of some precipice, swept on without being able to stop.

How gray Speed Warren's hair was about the temples: Speed who had reared three children without a wife. Speed, sitting across from old Jeremiah, was smoking a pipe, too, slowly, with long, deep puffs. What was Speed thinking? Why didn't somebody say something?

Tipsy McKee, sitting beside his wife, who looked strangely old and tired, tried to slip a bottle of real Kentucky from his pocket, but at his wife's warning finger, he put it back again.

The telephone stood silent, stupidly, cruelly silent. But there in the dimness of the little parlor, it seemed to Terry that from somewhere, someone else had come into the room; a tall figure with keen eyes that at that instant were fixed upon him, measuring him. Still conscious of the scrutiny, he heard Speed say in his slow drawling way:

"Old Charlie Collins would have liked this tonight. I wish he could be here. He was a fighter if ever I saw one!"

Speed smiled, forgetting the present and lost in the past. The recollection brought Tipsy and Jeremiah up with a sort of jerk. Jeremiah lifted his shoulders, or tried to, while Mr. McKee almost swaggered. "Say," he said, "do you remember that time—why, Lord,

it must have been all of twenty years ago? . . ."

And that started it. Speed, and Jeremiah, and Tipsy weren't sitting silent any longer. All three of them were back again in the past, back with old Charlie Collins, who had been killed one misty night in September, like tonight, on a fast freight headin' south.

"Why," boomed Jeremiah, "I recall as if it was yesterday the night old Charlie and I got in that wreck and went in the river. I was firin' that night. Haven't seen the like of such thunder and lightnin' and wind since. I can see old Charlie now swimmin' that roarin' river and shoutin' to me, givin' me the courage to go on."

"A sure enough railroader your Dad was." Speed looked straight at Terry.

Terry, stretching long lean legs, rose and went over to the window. "The mist is heavier," he said, and to his own surprise, his words came evenly, cheerfully. "Won't matter anyway," he continued, "we'll all be sleeping late in the morning. It seems we're out on strike."

The appraising figure had vanished, and Katherine, lifting her head, raised eyes bright with swift happy tears.

"Yep," said Jeremiah. "Looks like."

IT WAS just about that time in the nation's capital, a thousand miles from Cedar City, that President Wilson wearily signed the Eight-Hour Act that had been rushed through Congress and for which he, in common with the railroad men of the country, had been anxiously waiting; and shortly afterward, in the railroad town, the Warrens' telephone rang gladly, triumphantly. . . .

Only two comments stood out in Terry's remembrances later, stood out against all the chatter and laughter and tears of that misty night. One was Speed's simple statement, "Guess you kids will be getting married before long." And the other, coming from Tipsy with a light guffaw, seemed to be addressed to the parlor ceiling: "I'd better call Sam Fuller and tell him, or *The Silver Lance* won't have any dining-car chef on the next trip."

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Freak Rail Laws

By JAMES HOLDEN

IF YOU should attempt to study all of the laws that are meant to protect the railroad companies, the railroad men, and the traveling public, you would run into many that are sensible, some that are useless, and others that are positively ludicrous. The total exceeds ten thousand. We will mention a few.

Dear old Texas has a law against the use of cocoa mats in waiting rooms. Alabama solemnly declares it's illegal to shoot at an engine cab. Rhode Island forbids you to throw anything at a locomotive, while Indiana warns, "Do not attack a train!" Maryland is rather fussy about freights. It has a law against knocking one of them off the track.

Montana will not let you exhibit motion pictures of a train holdup—which, incidentally, bans the showing of the very first story-movie, "The Great Train Robbery."

In Louisiana, the land of Spanish moss and of the only legal system of any state in the Union that is based upon the Code Napoleon, a law provides that all depot waiting-rooms be equipped with cuspidors. Evidently sugarcane planters are much given to chewing tobacco.

Another Louisiana law prohibits white persons from using waiting-rooms set apart for Negroes. This is, of course, a hangover from slavery days. Some of the railway stations in India carry the distinction much further; they have about seven different waiting-rooms for various races, nationalities, and castes. Foreigners visiting the country have to be very careful to pick out the right one.

In Texas, special dining-cars must be run for colored passengers. If this system were adopted consistently in India, there would have to be seven diners on every long-distance train.

Maryland Has a Law Against Knocking Freight Trains off the Track

Arizona has a humane law compelling any train which is flagged in the desert to halt and give water to a person who needs it, while Florida requires every train to stop for a physician.

In Alabama if you wave a red light or red flag at a train when there's no danger you are likely to get a free ride to the nearest hoosegow. Incidentally, no billboard in Alabama is supposed to look like a crossing sign; it's a law.

Taking a quick leap up to New England, we find Maine railroads requiring that a copy of the statute against loitering be posted in every railroad station, and nobody is allowed to wear spiked shoes into the depot.

Connecticut law says that the locomotive must always be placed at the front of the train, every station must be equipped with a hospital stretcher, and street-car companies must pay for sprinkling their tracks, though it doesn't do the tracks any good; and no company is allowed to maintain a railroad depot without a name on it.

Which reminds us that every station in Minnesota must bear the name of the town, if any. Another Minnesota law—not at all stupid—forbids the construction of parallel railroads.

In Iowa, whatever other hobbies you indulge in, you are not permitted to be a pyromaniac. Especially, says the state, "Don't burn a depot!" And recalling the Andrews Raid of 1862 in which the *General* was captured by Yankee spies down in Georgia, Iowa has a law against conspiring to seize a locomotive.

The iron pikes of Indiana are obliged to detour cemeteries, while railroad trestles in Montana are required to have sidewalks for cattle.

"Don't put salt on railroad tracks," Alabama decrees. "It might attract cattle." Colorado is another curious state; it has legislation which prohibits driving cows onto the tracks.

WOE to the Illinois engineer who frightens a team by "wantonly" tooting his whistle or who "wilfully disfigures" an animal. Beasties hurt by Nebraska trains, says an edict, must be given first aid by the railroad employes and taken to a humane society.

Railroad Coaches Must be Disinfected Every Other Day in Texas

Michigan train and engine men are entitled to carry blank cartridges—for what, who knows? And those in Nebraska are allowed to go muskrat-hunting. But no shooting of game birds from trains in Idaho! And in Los Angeles an ancient city ordinance takes a firm stand against firing on jackrabbits from street-car platforms. Nothing is said in the New York City code about sniping at wild Indians from the windows of subway or "el" trains.

Soaping railroad tracks is a crime in Missouri. The little city of Lead, South Dakota, has an ordinance forbidding you to place a firecracker on trolley tracks, "especially if you touch a match to it." Possibly that ordinance dates back to the horse-car era, when Dobbin got skittish on the least provocation.

If you're in Connecticut, don't leave a hand-car on the highway. In Iowa, don't lend a hand-car to a friend; it's against the law. And in Vermont, don't leave a hand-car or any other nuisance at a crossing.

Engines must be equipped with windows in Indiana, curtains in Michigan, and numbers in Montana. We don't know of any law about giving names to locomotives, but we think it would be a good one.

Weeds must not be found on tracks in Idaho. Between July 15th and November 1st every pike in Colorado has to plow a six-foot strip on each side of the track and burn all the weeds between that strip and the rails. It's a crime in Arkansas for a railroad company to let Russian thistles or Johnson grass go to seed. In Tennessee a railroad has to cut down any tree at least six inches in diameter which is tall enough to reach the roadbed if it falls.

Coming again to Illinois, we learn that dead grass on tracks is a violation of law, and that trains must stop at all county seats in the state, except that three locals may be followed by two expresses. At any town in Arkansas within half a mile of the state line every train must stop.

Illinois and California towns may—and sometimes do—set railroad speed limits. The town of Pittsburg, Calif., with less than 10,000 population, once threatened to insist upon an eighteen-miles-an-hour limit unless all the Southern Pacific trains would stop there. For a long while the legal brains of the Espee argued against such bullheadedness. Finally a compromise was reached, so that today the company stops a few of its trains at this burg.

In Pennsylvania you are not allowed to ship explosives in disguise. And in Connecticut any railroad found transporting eggs of the browntail moth can be fined $500. If you see anyone carrying opium on a train in Illinois and don't report it, you are liable to a fine of $5000.

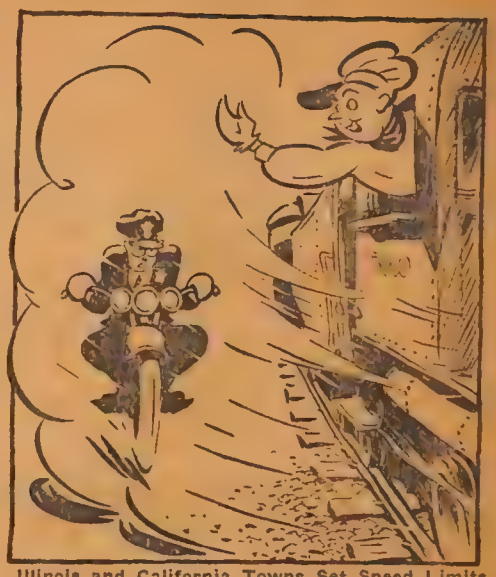
No freight may be loaded on Sunday in the Nutmeg State, unless it is perishable or on an "errand of mercy." New Jersey has an old blue law that a company may run only one passenger train in each direction on Sunday. Sabbath excursions are taboo in Georgia. So are freights, unless the goods are perishable; but the Governor may operate a dozen trains if he wants to.

A train crew in Maine must report any forest fire, and must never build a fire in the woods. Just how bright a headlight should be is defined by California: Bright enough so the engineer can see a dark object the size of a man on a dark night eight hundred feet away at thirty miles an hour.

No locomotive in Arizona may let water on the right-of-way, nor permit steam to escape so as to obstruct the view; and Arizona decrees flatly: Any engineer who allows a boiler to burst is a felon.

When a train starts in Illinois, the hogshead must either ring a bell or blow a whistle. Uncouple a locomotive in Iowa just for fun, and you may have to pay a fine of $1000. Members of the Railroad Camera Club have already discovered to their annoyance that Ohio doesn't allow anyone except engine or train men to climb onto motive power.

In Pennsylvania you are not to burglarize a locomotive. In Idaho it is illegal to steal parts of one. Section 1112 of the Missouri code says, in effect: "Don't run away with a locomotive." In Connecticut if you abandon an engine for any reason you are liable to a double headache—one from John Law, the other from New Haven Railroad officials.



Illinois and California Towns Set Speed Limits

ARIZONA makes it a crime to put together a train with a freight car behind a passenger car. Rhode Island has a very special rule that no passenger coach is to run between the locomotive and a carload of dirt.

"A railroad car," defines the Minnesota code, "is a building." But in Pennsylvania it's illegal for a railroad to haul any vehicle on its right-of-way except railroad cars.

All coaches in Alabama and dining cars in Florida must have screens. Prize packages may not be hawked on trains in Nebraska. Dry cleaning is strictly *verboten* in Texas trains. Blankets may not be swiped from trains in Vermont.

Once a Federal law put a stamp tax of one cent apiece on parlor-car seats, but this is gone now. Any parlor car daring to venture into Texas must have one cuspidor per three seats and two in the smoker.

Dressing-rooms must have signs saying that nobody may spit in a wash bowl.

All interurban cars plying in Texas must be hosed once a day and fumigated if germs are found. Railroad coaches must be disinfected every other day, and sleeping-car blankets have to be cleaned every ninety days. Michigan has a somewhat puzzling edict that passengers exposed to certain diseases must be disinfected.

Alabama has decreed that you may not apply for freight cars unless you intend to use them. Other laws forbid you to use profanity on any train in Iowa or Minnesota, whether you are a trainman or a passenger. Idaho won't allow drinking of intoxicants on trains, and Illinois has a rule that inebriates are not to ride in cabooses. Iowa insists that all cabooses in the state must have toilets.

If you respect the rules, don't forge a ticket in Connecticut. It is written in Michigan that railroad officials are not to steal tickets.

No Iowan city official may accept a pass; but in New Jersey a railroad must convey a lot of officials free—the Governor, the game commissioner, a set of prison inspectors, and fifty other people.

No railroad conductor in Iowa may carry a letter for hire. If he slips, he may be out $150. No passenger may carry one, either, if the conductor knows about it. Idaho threatens a penalty for any conductor failing to phone if his train is late.

And on every pike a Federal law requires trainmen to report every accident in which anyone is hurt. If Washington isn't notified in thirty days, the fine is $100 a day after that.

No coach in Rhode Island may be heated with an ordinary stove. And every one must sport a pail, an ax, and an iron bar. Every car running through Indiana must have a medical kit and a set of tools.

Trainmen may not lock the doors of passenger coaches in Indiana. Any Mississippi conductor who puts a passenger into the wrong compartment can be fined $500. If a trainman overcharges a passenger in New Mexico, he is liable to $500 fine. The money goes to the passenger.

A conductor in Minnesota can go to jail if he doesn't arrest a gambler or eject a swindler. In Florida any passenger must help a conductor with an ejection, if asked, even if his name is J. P. Morgan.

Brakes, says Alabama, are to be applied only by employees. It's a crime in Michigan to hire a fireman who drinks. Putting an inexperienced engineman to work in the cab is against the law in Indiana. Children may not be employed to run Montana trains. Every Idaho trainman must be able to read and write.

Plenty of these odd laws are wise and just. Plenty aren't. The number of freak rail decrees in this country, if placed end to end, would reach nearly to Washington. Choicest of them all was this gem from Kansas (Jimmy Earp's home state, but don't blame it on Jimmy):

"When two trains approach each other at a crossing, they shall both come to a full stop, and neither shall start up until the other has gone."

Fogs Are a Real Problem on English Railways

FOG, that thick pea-soup kind for which England is noted, interferes so much with the operation of railways that special means have to be taken to cope with it. Fog signalmen are placed at important points. They live near their work, and on their own initiative go to their posts when fog descends. Or they may be called from signal boxes. They use 300,000 detonators—or "torpedoes," as they are known in America. The noise-makers tell the engineers the position of the signal hidden from view by the fog.

As an additional safeguard, the Great Western Railway has its own system of automatic train control. If the line is clear a bell rings by the engineer's side. If not, a siren blows and brakes are automatically applied. The device is operated by signalmen through an electric ramp at each caution signal on 2855 miles of track and 3250 engines.

TRUE TALES *of the* RAILS

Actual Happenings Told by Eye Witnesses

A Scorpion in Every Pot

By HANK VOSS

THE desert country of the Southwest is strewn with skulls. Some say they're the remains of cows and sheep. I'm convinced they're skulls of railroad surveyors. Dopes like me, who went out there not knowing about the scorpions that hide in your shoes, the sizzling heat, the rattlesnakes—and the cloudbursts.

What did I know about deserts, when I went in to see T. L. Waggener at Colorado Springs? It was only by the oddest coincidence that I got the job. Waggener looked me up and down—as any hard-boiled chief engineer will—and said there was nothing doing on the Colorado Springs & Cripple Creek unless I wanted to fire Schenectadys with eleven-foot fireboxes up a four percent grade. I told him I was a surveyor. Then in popped a secretary with a business card, which Waggener read out loud:

"D. D. Rogers, civil engineer . . . Show the gentleman in."

Rogers made a good impression—a tall, spare man of fifty, one of those brass hats who get things done and make you like it.

"I need a levelman and a rodman for a railroad survey in Arizona," he announced bruskly.

"Meet Hank Voss," said Waggener, waving at me. "He's a good levelman. My nephew, John Waggener, is a passable rodman."

Windfall! I grinned and shook hands with Rogers. That was all. A couple of days later the three of us

plunked down in Clifton. Thirty-seven years ago Clifton was one of those sun-baked Arizona towns, with adobe ridges from wagon wheels in the streets, a few Mexicans lolling around and a flagpole at the center. On all sides you could see the desert stretching off to nowhere. That was where we were going.

The first day all was beer and skittles. A bright young fellow showed up and said he was Bob Miller of Los Angeles, our transitman.

"This desert stuff is new to me, but I guess we'll make it," he remarked with optimism.

For a day or two we hunted down one native after another, hiring chainmen to measure the desert, axmen to cut away the brush, teamsters, a flunkey and a Chinese cook named Henry Goon. We hired a lot of tents and stuff. One afternoon twenty-four of us set off in wagons.

Six miles out we struck the line of the Arizona & New Mexico. Near by was a ridge of barren hills, scooped out by a wide canyon like an oasis, with green bushes and trees. Through this dribbled the San Francisco River —big name for a thin, salty creek. As a place to camp, it was fair. We got up the two sleep tents, the dining tent, cook tent and office tent—the last a nook fully eight feet square in which Rogers, Miller and I would have to sleep and work. After the stove and tables were shipshape, the three of us plunked down in the sand in front of the office tent. The sun was setting in a mass of red and gold; the sky was pure blue and the air had a wonderful tang.

"This beats the city, any time," sighed Miller.

After a while the sun hit a jagged row of purple hills, and at the same instant Miller gave a grunt and leaped to his feet.

"Look at that!"

Where he had been was a monstrous spider, the grandfather of spiders, six inches across.

"Just a tarantula," said Rogers coolly. Miller stamped on it with his hobnails.

This deadly bug put a damper on our spirits. It wasn't long before I spotted another one coming toward me. I picked up a thick strip of bark near by—I'd put it there—and smashed the daylights out of Mr. Tarantula. After that we drifted over to the dining tent.

THE whole desert turned out to be bristling with animal life—not only tarantulas, but those thousand-legged scorpions and what not. The scorpions and tarantulas loved to hide in your clothes and pop out when you were going to put them on. Twice we saw those clumsy lizard things—gila monsters. They're slow on their pins, but they say the sting of one is sure death.

Henry batted out a pretty fair dinner, with the air of cakes and pies we'd brought from town, and then we sat around the big tent playing poker and gabbing. About nine o'clock one of the teamsters got out a lantern so as to go and look at the horses. The minute he stepped outside there was a deadly whirring that made some of us freeze in our tracks.

"Shucks, it's only a rattler," snickered Bill Shontz, an axman who lived in that region.

There were a couple of shots, and then silence. This was too much, and I pushed gingerly through the flap. I could see the teamster's light bobbing around in the distance, so I knew he was all right. In the light from the

tent I could see the body of a big rattler—well, three feet long—twitching there in the sand.

This was just our introduction to the desert. Next morning at five the clanging of the steel breakfast gong broke our peaceful slumber. While we were gulping flapjacks and coffee, the teamsters loaded the wagons with two big boxes of sandwiches, cake and pie for lunch. As the sky was getting gray, we climbed to the board seats, singing and joking, and jolted down the canyon. The most talkative man of the crowd was a whiskered boomer named Burke.

"They'll build a hotel here when the railroad is done," he remarked, "on account of the mud baths."

"With a scorpion in every pot," said Jim Gregg, a chainman; and I added:

"Specializing in rattlesnake stew."

This kind of nonsense went on till we got to where we were going. I began to think that in spite of the deadly animal life, the job wouldn't be so bad.

We clunked down in the middle of a tall mesquite grove and unloaded our instruments. The axmen began to slash a line through the brush, and we followed.

The sun came up. . . . Did you ever have to toil hour after hour in the shriveling sun of the Arizona desert, till your eyeballs fried and you felt as though you were in the center of a red-hot skillet? First the axmen got soaked from stem to stern with sweat. Then Miller and I began to yearn for a breeze, but never a breath of air could penetrate that thick brush. The heat gathered in the gash cut by the axmen, piled up around you like melting glass.

"And they say Los Angeles is hot!" groaned Miller.

All day, while we dripped and wrestled with the searing sun, we kept stumbling over rattlers. Once when Miller turned over a big rock, he found two of them nestled under it, as cool as you please. Now and then we would hear a shout and a whacking; we knew that one of the men was killing a serpent.

"If you see a stick and it doesn't move, kill it," said Burke.

By sundown we had set stakes over the first mile, beginning at a turnout curve and heading toward Pueblo. We had also massacred twenty-three rattlers of various sizes, colors and varieties. This turned out to be less than the daily average.

Have I shown you that surveying in the desert is a grim job? Nobody shed tears when Rogers said we could loaf on Sunday. We sat around or washed our socks. After a while I craved something more exciting, and so did Jim Gregg.

"Maybe if we went over to Clifton—" We wheedled the teamsters into lending us two of their best plugs. It was a sultry day. Near Clifton we found a whole swarm of Mexicans swimming in the river *au naturel*. Some of the young women were fine-looking. After bolting a lunch at a Chinese beanery, we drifted into a sociable game of poker. By mid-afternoon Jim was cleaned, but I was a few dollars to the good.

"Looks like a storm," Jim predicted, as we stood by the door.

An Arizona storm didn't mean much to us. Inky clouds were gathering up around the peaks up the river. Soon the lightning was zipping around with wicked regularity, and the crash of thunder mingled with the roar of rain and hail. For a full hour the clouds poured. Abruptly the rain stopped and

the setting sun lit up the clouds.

"That's all," said Jim.

It wasn't, quite.

LATE in the evening—both of us broke—we headed up the river toward our downy cots, the faithful nags nosing their way in the dark. The old river was as calm as a sleeping tiger. After a two-hour ride, we put up the horses and stumbled over the rocks toward the tents.

"Listen!"

Weird noises beyond the tents stopped us short—as if a wind was tearing out bushes and rolling rocks. But there was no wind.

"What is it?"

I tried to be funny. "Sounds like a herd of bears raiding the grub."

Grabbing a six-shooter and a lantern from one of the sleep tents, we circled around, peering into the gloom. I kept an eye on a near-by sapling—in case the bears should charge. We pushed on through the brush toward the river. The crackling rose to a roar.

Underfoot, the bank caved. I splashed headlong into two feet of violent water.

The river was swollen by the cloudburst and tearing at the banks. Now it was bearing down on the camp in a tidal wave. Seizing a bush with both hands, I squirmed out, shouting a warning to Gregg. Water was rising around the camp. We made a dive for the tents, shouting at fellows, kicking them, throwing them out on their hunks. They cussed us plenty.

"The water's tearing away the bank outside!" I was yelling. "The tent won't last five minutes."

As they began to get the idea, the boys bundled their blankets under their arms and made for higher ground. Gregg and I dashed over to the office tent, where Rogers and Miller were asleep.

"Get up—the camp's flooded!"

Miller opened one eye. "Skiddoo, gnat! You've had too much Clifton."

He pulled the blanket over his head. We gathered up what personal stuff and instruments we could and made tracks up the hill to an old shed. When we came back for another load, Rogers and Miller were hobbling along with their arms full and making heroic efforts to get into their pants. Water was swirling through the tent.

"What did you get up for—don't you like water?" asked Gregg.

Floods, hail, rattlers and sun—Mister, you can have that desert. Next morning, after the washout, the river went down. We went to the bank and stared at a few shreds of canvas strung on the bushes. Nothing else was left of our camp. Henry set off a string of Chinese curses. All he could find of the food supply was two hams and one box of prunes. Each of us got six prunes and a mouthful of meat.

"Too bad we lost the garbage can," mourned Burke.

The teamsters rounded up a few horses, but there was nothing left of the road. All twenty-four of us hiked back to Clifton.

That wasn't the end. Rogers picked up a new camping outfit and we went back to wrestle with the desert for several hundred miles. We learned to love rattlers and cloudbursts, almost.

It would be fine if you could take a ride over that line today in an air-conditioned streamliner, admiring the scenery and saying: "It must be hot out here sometimes." But I'm afraid you never will. We staked out the whole route, and drew up reams of neat figures. But nobody ever built the railroad.

Three in a Row

By H. D. BALLENGER

SO FAR as I know, I am the only person still living who actually saw the great frame trestle which used to span the Gunnison River swept away to destruction on March 4th, 1884. What's more, I witnessed this entire disaster from beginning to end.

The crash itself was not strange, considering the type of bridge involved and the fierceness of late-winter storms which even now tear through the rugged Black Canyon of Colorado. Old-timers have engaged in endless controversies on this subject, some contending that broken timbers would not fly upward from a downward impact. That may be so; I don't know. I'm only going to tell you the facts as I remember them, pieced out with bits of information I have learned since; and you can judge for yourself.

Now, I'm not superstitious; but I do know that jinxes of one kind or another have cut a figure in railroading ever since the first wheel rolled over strap-iron rails. And I do know that the common bugaboo about three accidents in a row is part of the story of that long-ago day on Gunnison bridge. The collapse of that structure was the third—and worst—of three accidents which happened on that stretch of narrow-gage railroad in three days. First a man was killed, two days later another fellow lost a foot; and finally—Well, here is the story:

I was then a boy of fourteen, with a mind keenly impressionable, and was on my way to Cimarron to visit an aunt. Her name was Matilda. It was my first trip into the mountains. Naturally I was bowled over by the jagged peaks, and gorges, and shallow rivers foaming over stony beds, and dark patches of mysterious forest that marched by the train windows in a fascinating panorama. That was nearly fifty-five years ago. I have traveled far and wide since then, but the majestic beauty of those early pictures still haunts my mind above all others.

At Denver I changed from standard-gage coaches to those of the narrow-gage Denver & Rio Grande, which by comparison seemed amazingly small and dingy. Sides of the coaches were low—a tall man had to look out for his head—although the center was high enough for a seven-footer. The cars themselves were built so low that their axles extended several inchs above the floor and were covered with sheet-iron. I grabbed a rear seat in the last car. It was an excellent position from which to view the ever-changing landscape, white with snow that, here and there, had already started to melt.

When we reached Poncha Springs a helper was hooked on ahead to help us pull the twenty-one miles to the summit of Marshall Pass. Puffing and snorting, the squat little locomotives wound their tortuous way up the side of the mountains, around curves so sharp that I could almost shake hands with the enginemen, who were going the other way. Up grades so steep that it was said facetiously "a hogger could spit in the conductor's lap" if he had felt so inclined.

Reaching Marshall Pass, gateway of the Continental Divide, 10,856 feet above the level of the far-away sea, the helper was uncoupled and we passengers were allowed time to get a good view of the country through the openings in the old blackened snowshed that stood there, summer and winter, at "the top of the world." Then: "All aboard!"

Down the western side the train rumbled. The curves were as sharp, the grades as

steep, as on the eastern side. You could hear the hiss of airbrakes almost constantly. The wide Tomichi Valley, with its almost flat road and long straightaway, proved to be a welcome relief for nervous travelers who were unused to a ride so jittery or air so rarified.

At Gunnison came one of the three accidents which I have mentioned. Our train, after unloading the passengers who were to eat dinner in the LaVeta hotel, was set back on a sidetrack while they ate. I remained in the coach. Mother had packed me a generous lunch, and I munched it leisurely, gazing out the windows.

I observed a string of freight cars rumble toward a switch where a switchman stood waiting. These cars were being shunted onto a track to make up a train. The "kicked" cars hit the standing ones a jolt that caused them to jump and rattle. When I saw the switchman run to couple the car with the familiar link and pin, I shuddered, wondering how he could avoid being caught. It turned out that he couldn't. Without going too much into detail I will say that the poor fellow was rushed to a hospital, having lost, as I learned, part of a foot.

FEW passengers witnessed this tragedy. I regret to state that I was one of the few. Well, our train got under way again. I don't know how long we had been traveling when the conductor and the flagman took a seat near me, after finishing their work I suppose, and began talking somberly about the accident. Sick at heart but lured by morbid curiosity, I edged closer to listen.

"Too bad about Tom" the conductor was saying. "One of the best switchmen on the road . . ."

And the flagman said: "That makes two accidents in three days. Remember that new brakeman, day before yesterday, who fell under the wheels not so very far from here? Don't know how it happened. Stumbled between two cars, I guess. They're holding the funeral tomorrow."

"Yes, I know," the other croaked.

"Two accidents in a row. That means—"

"Don't say it, fellow!" the conductor interrupted hastily. "I don't believe in jinxes anyhow." But his very anxiety to hush up the subject indicated that maybe he did.

We were rushing downhill now, and rushing fast. Too fast for safety, it seemed to me, although I was only a kid from the plains country and in no position to judge speeds on a mountain railway. The cars lurched and swayed. We were thrown from one side to the other in our seats. Like a huge snake the train sped sinuously on, through high palisades whose tops I could not see. We roared around curves and across shaky trestles. I gaped, spellbound, every foot of the journey.

Looking down now and then, I could see the Gunnison River, perhaps twenty to forty feet below, surging sullenly along, bearing on its opaque bosom chunks of ice, snow-covered logs, driftwood crested with foam. I looked up, too, fascinated by the wildness of this scene. Above and below, it formed an exciting picture.

As we approached Cimarron, looking up and ahead, I watched with terrified interest as a huge boulder, evidently loosened by the melting snow, detached itself from the side of a cliff, slowly but surely, and slid down, picking up incredible speed, directly onto the path of our train! Fear rooted me to my seat, paralyzed my tongue.

Then came a terrific crash. Thunder reverberated back and forth between the big granite walls. Through them came three short blasts from the locomotive. From my window I observed flying broken timbers. I heard the sound of squealing brakes, wheels grinding and sliding on iron rails, gasps and shrieks of men, women and children thrown violently against the backs of seats.

The train came to a shuddering stop. Soon it began to reverse. Each car bumped harshly against the next with no regard for the scrambled passengers. After backing up a short distance it stopped with a groan. Amid the confusion, I distinctly heard the conductor cry:

"My God, it's come!"

I guessed that he meant the jinx of three accidents in a row. With the first grinding of brakes, he ran to one of the open plaforms. I studied him anxiously. Even before the wheels had ceased turning, he was down on the lower step and leaping off. He looked up at the flagman, close behind, and ordered:

"Keep the passengers inside, if you can! I'm going on up ahead. . . ."

With the train on a slight curve, I could, by leaning out the window, get a clear view of what was taking place. I saw the conductor and some other man lift a body from the cab and lay it on the ground. Then they helped out another man, who staggered weakly to a rock and sat down, his head buried in his hands. After that the conductor came running back, and called out as he ran:

"Is there a doctor aboard?"

There was. He forced his way through the mob of frantic, struggling, screaming passengers.

"Come with me," the conductor requested, "and see what you can do for the fireman. The engineer's past help—God rest his soul!—a piece of splintered timber run clear through his body."

THIS dolorous information had a quieting effect on the passengers, and the din subsided almost by magic. Piecemeal, we learned what had happened. The boulder was as large as a watchman's shanty. It had struck the trestle which we had to cross to reach Cimarron, a mile and a half distant. It landed some fifty feet from the near end of the bridge with the combined force of half a dozen pile-drivers. The engine, in that zero moment, was less than forty feet from the edge of the trestle —a frame structure seventy feet high and about eight hundred feet long.

Although the span was strongly built of heavy re-inforced timbers, the ponderous missile had crashed down as if it had been a pile of matches. One flying splinter had gone through the engine-cab window on the fireman's side, gashing his face. Another, a larger one, had impaled the engineer, causing instant death. A hero's death, I might add.

Luckily for the rest of us, he had slowed down near the bridge. When the crash came, he pulled the reverse lever and threw his weight on the brake lever. This was his last act. As he fell, the fireman, although injured himself, instantly sprang over to the right-hand side and took charge. With less than ninety feet in which to stop, the engine slid stubbornly to within six feet of the shattered trestle. Just as she backed onto safe ground, the entire structure collapsed with a frightful clatter. Part of it was swept away by the swift, boiling current of the Gunnison River.

Had the boulder fallen ten seconds later, the results would have been infinitely more appalling. Every person aboard the train might have been killed or injured. Had it fallen ten seconds *before* it did, only the trestle would have been destroyed; the engine crew, in all likelihood, would have emerged unscathed. Ten seconds, one way or the other. The irony of fate!

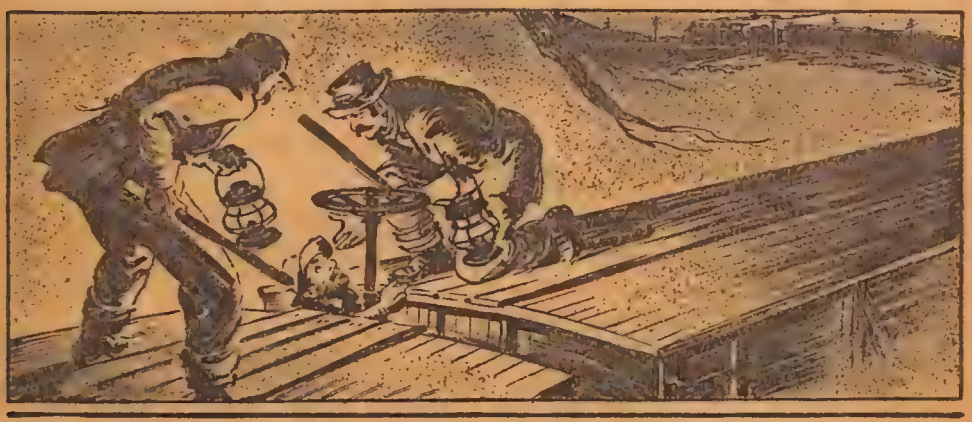
The head brakeman, who understood telegraphy, took an emergency sending key from the tool cabinet on the train, and climbed a telegraph pole, and sent a message to Cimarron. Within an hour a wreck-train appeared on the opposite bank with equipment to build a swinging foot-bridge. On one flatcar I could see coils of cables and ropes. I watched, with the curiosity of youth, the men bring out various tools and equipment from a boxcar, and set to work.

I observed the entire operation, from the shooting of a light line across the chasm to the laying of the last tie. This was something I knew I'd always remember, along with the wild ride and the slender escape from death on my first visit to mountain country.

All night the bridge-builders worked, in the glimmer of lanterns and the glare of oil-burning engine headlights. By noon the next day, March 5th, the temporary span was completed, and all of us passengers were transferred, cautiously, across to the other side. The precarious walk across that

slim, swaying foot-bridge, suspended like a cobweb high above a yawning chasm, with the roar of angry waters in your ears, was in itself an unforgettable experience.

And to cap the climax, when I finally reached my aunt's peaceful home in Cimarron, she bawled me out for arriving a day late. Dear old Aunt Matilda! She's been gone to glory now for years and years. How could she know, until she was told, that her graceless nephew had lived a whole lifetime in the space of ten seconds?



'Bo Money

By "HAYWIRE MAC"

IT WAS against the rules. It was against the law. It was against the precepts of humanity and brotherly love to collect 'bo money. So we all collected 'bo money. I certainly got my share of it. In my boomer days I worked all over the West during the great construction period when a vast army of casual laborers were drifting from job to job and every freight train was loaded with "blanket stiffs" and their dingy bedrolls.

There was a "jungle" in every small town; while in the cities, the offices of employment sharks blazed with "Men Wanted" placards. Mule-skinners, plow-shakers, cooks, flunkeys, coyote men, hard-rock miners, lumberjacks, ranch hands—almost anybody could go to work, anywhere, any time.

During my boomer days many roads were built: the Canadian Northern and the Grand Trunk Pacific and the Chicago, Milwaukee & Puget Sound and the Western Pacific and the San Pedro, Los Angeles & Salt Lake and a lot of others. All railroad construction jobs and many non-rail jobs offered free transportation. It was possible for the itinerant shovel-stiff to make long jumps on the cushions for an office fee of a couple of dollars.

When the D&RG was double-tracking and changing the grade on Soldier Summit in 1912, one carload of men was shipped from Denver and another from Salt Lake City every day in the week except Sunday. But not ten per cent of those hired ever

went to work. The vast majority simply grabbed the first freight train out of town that was going in the right direction and continued their journey. And that is when we brakemen started to collect.

That was a pretty long jump—from Denver to within seventy-five or eighty miles of Salt Lake City—but in the days when the Espee cut ice at Truckee to keep the fruit trains cool in summer it was possible to "ship" from the Mormon capital to California (Truckee) for a dollar.

The longest ship I ever heard of was from Glasgow, Scotland, to Portage la Prairie, about sixty miles west of Winnipeg, for five American dollars, including meals, etc., enroute. This was around 1908. The Canadian Northern shipped thousands of Scotch lads over at that price. Very few of them stayed on the job very long. As soon as they learned something about the country, they scattered. I'd be willing to bet there are thousands of men in the States and Canada today who were brought over in those Canadian Northern shipments.

Almost every Western pike was good for 'bo money in those days, but you had to be tough to collect it. The usual price was one dollar per division of approximately 100 miles, with a buck and a half as tops for long divisions, such as the one from Salt Lake City to Pocatello, which is 175 miles of tough walking. That used to be a good place for cash fares, as there was a big construction job at Alexander, Idaho. Two "shacks" (brakemen) who would really get out and hustle could split twenty to thirty dollars every trip.

One time my partner and I loaded fifty-six Mexicans into an empty at McCammon Jct., where the Utah Division connects with the main line of the Oregon Short Line. We had hauled a goodly load north on a manifest train and we split eighty-four bucks for the round trip when we got back to Salt Lake City. The biggest collection I ever shared was on the "Jim Hill" road between "Jimtown" and Fargo, when "Buster" Brown and I came into Fargo with 138 harvest hands stowed away on the train at one dollar per. I worked on that division for three months and purposely missed the paycar every payday until I finally "blew up." I sure had a "long stake" when I left.

I NEVER worked on any pike where the conductor took a split of the 'bo money. That was the perquisite of the shacks. Although we might buy the "brains" a porterhouse steak or a few drinks once in awhile, we never gave him any money. If he was a home guard he wouldn't accept it. If he was a boomer and the grain or livestock rush was on, he could get ten dollars apiece for empties in any town on the division.

There was always a car shortage when the freight really started to move. Since distribution of empties was largely left to the freight conductors and since every station agent on the line was yelling for cars, it was easy enough to drop the empties where the shipper was willing to give you a little something on the side. A smart conductor who didn't care much about how long he held his job would clean up on any grain-hauling road.

As I said before, the 'bo money was there all right, but you had to be out hustling all the time instead of polishing the seat of your pants in the "crummy" or on the fireman's seatbox.

Most itinerant laborers were so used to being shoved around by every son-of-a-gun and his brother that they handed over the customary "fare" without much argument. On the other hand, you had to be set for the occasional team hand or hard-rock stiff who would give you a battle.

The mule-skinners and the miners rarely carried weapons but the "yeggs" (hobo criminals) were nearly always "heeled" and always dangerous. Some of them packed revolvers, while others had weapons that were even more lethal at close quarters—old-fashioned straight razors. Very few brakemen ever carried more than a stout hickory brake club, a heavy lantern and well-hardened fists.

One dark night a yegg took a shot at me near Downey, Idaho, and missed; but he didn't pull the trigger a second time. I simply jumped in and beaned him with a heavy-framed lantern. This was not so much bravery as it was common sense. A man is harder to hit coming in than running away when the marksman can take his time. Anyway, I left Mr. Yegg at Downey with a sore head. Later I sold the gun to a bartender in Salt Lake for five bucks.

When "Local 400," which was the Agricultural Workers Department of the I.W.W., was organized in the spring of 1915, they immediately declared war on all yeggs, on the town marshals who protected them, and on all money-hungry shacks. There were some Homeric battles on the roads in the Grain Belt that year, but by next year (1916) the Wobblies had their own strong-arm squads riding the trains to protect their members. They would have been just about running the Wheat Country in another year had it not been for our entrance into the World War.

ON SEVERAL occasions I got badly mussed up by yeggs ganging up on me, but in those bygone days I was damphool enough to enjoy an occasional battle. It took more than that to cure me of the 'bo money habit. The thing had to do with a Mexican boy. I won't tell you the name or location of the road, except to say it was west of the Rockies. I was braking partners with a guy we'll call Lee Jackson. (That isn't his name; he's now an official on the same pike.)

Lee was a six-footer, quick as a cat, tough as they make 'em and about the most inveterate 'bo hunter I ever worked with. We had a regular run on manifest freight. We worked our train from one end of the road to the other, and it was our boast that no 'bo ever rode with us without paying unless he had a union card of some kind.

In pulling out of a siding, we would crack a yellow fusee and then cross over to the other side of the track as the drag rolled by to spot any passengers who might be on the rods or riding the bumpers. Closing the switch, we would grab the crummy and go over the top clear to the engine, frisking every possible and impossible hiding place on the train. If there was a 'bo anywhere on board we found him and he either produced a union card, paid his dollar or unloaded at the next stop.

One night the Mexican kid, about seventeen years old, attempted to ride our train. He was the most elusive little devil I ever tried to ditch. We unloaded that kid five times in the first fifty miles, but when we pulled into "X Junction" and spotted the engine under the coal chute he was still with us, impudent and cocky as ever.

My partner simply boiled. Were we, two of the toughest shacks west of the Rockies, going to allow this punk to make monkeys of us? Our pride was touched. We told the little Mex that if we caught him on our train again we'd burn him up with a fusee or something equally dire. The kid sat on a tie pile smoking a brown cigarette and showing his white teeth in an impudent grin, meanwhile kidding us in a mixture of obscene broken English and Spanish.

Leaving X Junction, we caught the caboose as usual and started over the top on our customary inspection tour. We each carried a blazing yellow fusee in addition to our lanterns and we overlooked no bets in our search for stowaways. About halfway to the engine we found the kid again. He was hanging on the side ladder of a boxcar. Till my dying day I shall never forget the look of stark terror on his young face as he looked up at us—and jumped!

We turned sick as we watched that leap, out and away from the train. We saw him hit the ground, bounce, roll over and over, still rolling as the black night of the lonely desert swallowed him up.

"Get him stopped, for God's sake!" yelled Lee as he climbed down on the side ladder and frantically swung "washouts" with his fusee. The hogger wasn't looking, but the conductor was and it was he that pulled the air.

We had been going better than thirty miles per when the kid jumped. It look us some little time to back up and find him where he lay, all crumpled among the sage brush. The impudent grin was gone, the brown young face was covered with blood and dirt, but—thank God!—he was still breathing. We got out a stretcher and loaded him into the caboose and made him as comfortable as possible until the terminal was reached.

To the company doctor we made a clean breast of our part in the affair, telling him at the same time just what sort of lousy, degenerate so-and-sos we considered ourselves. We begged him to do his best for the kid. The doc looked us over out of his wise old eyes and promised. Furthermore, he fixed up a report for the con that covered up the whole thing as far as the company was concerned.

The boy had a broken leg and cuts and contusions too numerous to list. We hung around until Sawbones had finished setting the leg and cleaning the cuts and we saw the little Mex stowed away comfortably in a clean white bed.

Then we went around to the nearest saloon, and although we drank many, many drinks of raw liquor, it had no more effect on us than so much water. I guess Lee could still see that frightened face looking up at him, as I could; still see that boy spinning away from the train.

We were called for the return trip right on our rest. Lee was standing beside the head car when I backed the engine onto the train. We looked at one another.

"'Bo money this trip?" I queried.

"No 'bo money this trip or any other trip," Lee declared with an oath, and we shook hands on it.

And so, from being the terror of the tramps, we became the softest crew on the division. The 'bos used to wait for our train. In fact, we gave the traveling element such a thorough letting alone that the trainmaster had us on the carpet.

"I hear that you fellows are hauling all the tramps in the country?" he questioned.

"Mr. Trainmaster, I've ditched my last 'bo," Lee replied solemnly. "They can roost on my train till they cave the roofs in. If you want 'em throwed off, you'll have to tell the bulls to do it."

"And that goes for me," I said.

I am deeply grateful at being able to add that the kid recovered with amazing speed. His impudent grin was very much in evidence when Lee and I said good-by to him. He had a new suit and hat, he had money in his pocket, and he was "squared" for a ride on the cushions all the way to the Coast. And did Lee and I feel better!

Yes, the 'bo money was there, but to get it you had to be tough—or something.

APPEAL

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Smith Bros. Cough Drops are the only drops containing VITAMIN A

This is the vitamin that raises the resistance of the mucous membranes of the nose and throat to cold infections.

Fortitude

By E. W. KNAPP

FORTITUDE is where you find it. While I was railroading in Texas for years I worked with quite a few tough hombres and at least one hero. Most of us were just plodders, trying to eke a living out of the narrow-gage that ran between Corpus Christi and Laredo. The bosses told us that if we worked hard enough they'd build on to California; but they never did. They stopped at Laredo, and the road's still there today, the same 160.8 miles, only it's standard-gage now and it's called the Texas Mexican.

This hero I'm going to tell you about had more fortitude than any of the tough muggs. Resourcefulness, too. Enginemen had to be able to do a lot of things on that poverty-stricken pike. On layover days they had to tighten loose nuts and bolts, set up wedges, clean the headlights and pack valves and piston rods. Packing was done with hemp, and at times there was no hemp.

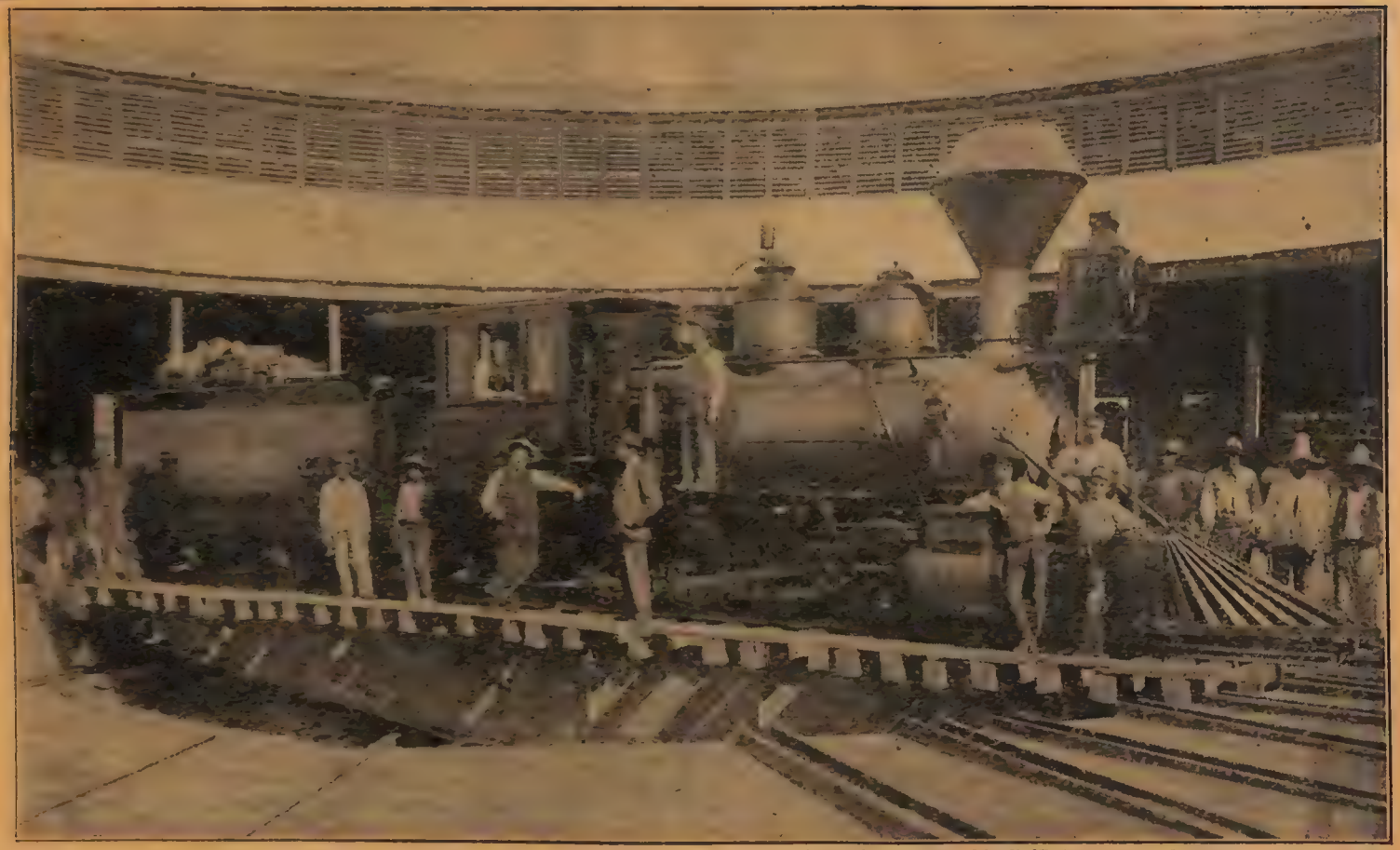
In such emergencies Frank Larkin, the man I have in mind, was clever enough to make packing out of old hose. He would cut the rings half an inch wide, and after trimming the ends to suit the diameter of the piston rod, he'd wrap them with lamp wick. On one occasion, when this ran out, he demanded an old suit of overalls from his fireman. The rings were swabbed well with tallow. Jammed into the stuffing box, with the proper adjustment of the glands, the job was well done.

Fortitude was something you had to have around those Corpus Christi shops. Even the rolling stock had tricks. When I was working as a machinist in 1887, when the line was nine years old, the engines were Baldwin 2-6-0 Moguls carrying 140 pounds of steam, with unbalanced D type slide valves. The monitors, gage lamps, water glass lamps and headlights all burned kerosene. The engines themselves were fired with mesquite wood.

What was really tricky, the locomotives didn't have lubricators. Lubrication of valves and cylinders was by means of a tallow cup screwed into the cover of each steam chest. The fireman had to keep these cups filled. To do this while the train was making forty miles an hour meant climbing out front, hanging on tight and closing a shut-off valve in each tallow cup. Later they changed the system; they put the cups inside the cabs, with heated copper pipes leading to the steam chests. Guess why they made the change? Too many firemen, prowling around in front, had been bounced off into thin air.

Our engines had no driver brakes of any kind, though the tenders were equipped with hand brakes. Try stopping an engine with no air-brakes at a water-tank some time! Narrow-gage hoggers such as Frank Larkin may have been primitive, but at least they could make nice smooth stops by using the reverse lever.

All of our freight cars had the deadly link-and-pin couplers, and only hand brakes. The line was part Mexican, because at Laredo we connected with the Mexican National which



Original Photo Owned by E. W. Knapp, 148 Newman St., El Paso, Texas

A Narrow-Gage Baldwin Consolidation (2-8-0), No. 63 of the Mexican National, Is Seen on the Turntable at Acambaro Terminal, in 1895, Ready for a Trial Run after Being Repaired under the Direction of Master Mechanic Knapp (Standing on Running Board beside Westinghouse Air Pump). At the Cab Window Engr. "Whiskers" Barnes Is Looking Down at the Fat Mr. Wicks, Knapp's Secretary and Time-Keeper. The 63 Burned Pine Wood, Had 16x20-Inch Cylinders, and Carried Designation Lettering on the Headlight. She Was a Sister to the 60, in Which Engr. Frank Larkin Was Fatally Injured

bridged the Rio Grande into Nuevo Laredo. The same set of officials acted for both roads. Both became standard-gage in the early 1900's.

In spite of the poverty and general toughness of the place, there were always boomers asking for jobs at Corpus Christi. Being on the coast was an attraction; we had salt-water swimming, deep-sea fishing, boating and duck hunting. Best of all were the seafood meals—fish, clams and oysters, shrimp and crabs. But we could use only a few men. We had a few passenger conductors, five engineers—one was a boomer—a couple of hostlers, the foreman and the master mechanic, a handful of blacksmiths and seven or eight of us machinists.

Frank Larkin didn't hold the seniority ranking—Ted Musset did—but to my mind he was the greatest man of the lot. Most of the time he was working on the narrow-gage with us, Frank handled a yard goat at Corpus Christi. Eventually he went over to the Mexican National as a road engineer.

By 1893 I was seeing a lot of him, because I'd been made mechanical foreman on the MN at Toluca, Mexico. Hilly country, it was. And dangerous to run wobbly teakettles over. But men like Frank never talked about danger, nor the unpleasant weather that gave our stretch of main line the name "Stormy Division." And now I come to the incident I was going to tell you about.

It was a wild August night, black as a cave, with a pounding, wet, hard rain and incessant flashes of lightning—the kind of night that makes a road man wish he could stay home. As luck would have it, Frank was called out that night. When he was leaving Toluca, I hailed him.

"Nice weather."

"It's all right," said Frank cheerfully. "I've seen a lot worse."

He had engine Number 60, a Baldwin consolidation 2-8-0, and train Number 13. But Frank wasn't superstitious. Neither was I, for that matter, even though I knew the night was bad and Frank's train was an antique that rattled along with link-and-pin couplers. I knew also that all of his brakes were operated by straight air from a prehistoric Westinghouse pump. Frankly, I didn't think much of his brakes, but what could you do about it?

On a somber night anything is likely to happen. Ten o'clock came, and the telegraph buzzed. Word began to get around. I could sense, even before I heard, that something had gone askew. Then:

"Larkin's had some kind of wreck up in Tultenago Canyon." (That was about 55 miles to the north of us.)

The news brought a bustle of excitement. Men began to fit out a wrecking train, so I knew the wreck was real. But I couldn't learn any details. While they were putting the train together, we wasted a lot of time trying to get a doctor. We combed the whole moth-eaten muddy village in the drenching rain, looking for somebody with an M.D. Nothing doing. One doc was out of town and wouldn't be back for three days. The other was busy with an operation. We wired frantically to several nearby communities and at length located a physician. But by the time he'd hitched up his horse and buggy and sloshed into Toluca, we'd held the wrecking train for six, long, precious hours—hours which, we learned later, spelled the difference between life and death.

Nerves tense, we were glad to get going. Northward we swished around

curves, over trestles, through deep gloomy cuts. Off to the east we could see the fitful flashing of the storm. As we drew near the scene of the wreck my hands felt clammy with apprehension.

We broke out flares and swarmed around the engine. Old Sixty was down on her right side. She'd smacked right into a giant boulder, washed down from the wall of the canyon. Her cab was full of steam. The tender was jammed right up against the boiler-head.

I said to myself: "Larkin's smashed to a pulp; no doubt about that."

But I was wrong. Still pinned to the floor of the cab deck, eight hours after the wreck, we found him alive and chirping.

"Hello, boys!" he greeted. "Get me out of here and I'll be as fit as a fiddle."

His ankles were clamped down by broken floor boards. Forty endless minutes it took us to pry them loose, carefully. From time to time I stopped and talked with Frank. I never saw a guy more relieved.

"Sure, I saw the rock—just as we hit it. Hell, I'm not hurt."

"Must have been a lot of steam," I said anxiously. "Did you get much inside of you? How are your lungs?"

Frank made a face. "Oh. maybe I got a little steam through the broken gage-cocks. Look here!" I peered in and saw that he had a broken hunk of cab window in his fists. "See, I been keeping the glass in front of me. Keeps the steam out of my nose. I'm all right inside."

Finally we hauled Frank out of the shattered cab. The poor fellow seemed wobbly on his pins, so we helped him down to the caboose as gently as we could and put him to bed. I'll never forget what he said as we left:

"Thanks, boys. Now I'm fine."

Roaring back to Toluca, we got him to the emergency hospital in the yards. The doctor sounded him all over, listened to his lungs. The doc wasn't a bit pleased . . .

And then, just as the sun was rising, Frank perked up. He took one last long look out the window through which the light of morning was flooding his room, and mumbled something we couldn't hear, and dropped his head on the pillow. Sure, he died. His lungs were burned out.

As I was saying, fortitude is where you find it. Living down there on the edge of civilization, you could appreciate a man like Frank Larkin.

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Mixed Orders

By H. RIDGELEY

REGARDLESS of how many times things are checked and rechecked, it occasionally happens that when one man lets an error slip by him, everybody concerned lets it get by also.

I was once mixed up in a deal in which ten men, all experienced, failed to catch a slip. Fortunately no harm was done, as it was one of those odd cases in which it was impossible for any damage to be caused or serious delay occasioned, yet it was a dischargeable offence.

I also know of a case where the operator made up a wrong transfer sheet on a heavy train-order job. Both operators signed it, one failed to deliver the order, the dispatcher failed to catch the omission, and a crew of seven men left town in the face of a superior train.

But the worst instance of rule violation I ever witnessed or heard of, so far as movement by train orders is concerned, happened at Newton, Kansas, where I was employed as an operator by the Santa Fe. It concerned a first-class train, No. 4.

Newton telegraph office at that time was very busy. There was a shortage of brass pounders, and the late summer grain and fruit movement was quite heavy. Passenger trains were cleared from "N" office, in the office building east of the depot. I was on the train-order job in "N," reporting for duty at midnight.

Along about four a.m. I had four first-class trains at Newton. Among them was number 4 eastbound and number 11 westbound. The latter had about thirty minutes dead time at Newton.

In order to save time and a possible delay for orders, it was customary for the operator to clear all these four trains a few minutes before train time, pin orders and clearances for each to the train register, which was located in train-order room ajacent to main telegraph office, and go back to main office and get busy on a telegraph wire. Each conductor would then pick up his individual orders. There was also a buzzer system, by which conductors could summon an operator.

In those days the long locomotive runs were coming into vogue. Frequently I would handle delay reports from Emporia charging delays on passenger trains to work on engines at Newton. If a train did not move on time it was assumed that something was wrong with the engine. The operator at "N" was not concerned about that, as his duties consisted only of clearing trains. If the dispatcher wanted to know why a train was not moving, or

other cause of delay, it was up to him to find out.

On the morning in question, I pinned the orders and clearances to the registers in the usual manner, and was back in telegraph office working a Morse circuit, when the buzzer rang, as I had glanced at the clock on the way to the train-order room, I figured that all trains except 11 were gone, and I wondered what he wanted. When I re-entered the train-order room, Number 11's conductor was poking a fist full of orders across the counter.

"Say," he said, "I went into the Harvey House for a cup of coffee while we are laying here and thought I would check dates, completes, signatures, and so forth on my orders; and I see where I have Number 4's orders by mistake. I guess that after 4's conductor and myself read our orders we laid them down while we registered and then each picked up the wrong pile. Please give me another set for 11."

"Sure thing," I replied. "Guess something is the matter with 4's engine. I will give you my set, and when 4's conductor comes back I will give him the set you are returning and keep the set he has, addressed to you, for my file."

I gave him my office copies addressed to Number 11, and returned to the telegraph office. In a short time the Middle Division dispatcher gave me a ring. I went to train-order room and answered him.

"What did you clear 4 with this morning?" he asked.

"They are not cleared yet," I answered. Then I told him about 11 and also said that 4's conductor had not returned.

"No," he said. "And he is not going to return. He just showed up at Florence with 11's orders."

Florence was about twenty-five miles east of Newton. By sunrise it seemed that every official between Kansas City and Albuquerque was in the office asking me questions. They scowled and hinted that I was the real culprit for not personally delivering orders as prescribed by rule.

However, E. E. Lytton, then manager of the office, told them something, and I heard no more about it. I was not even present at the investigation. Later a bulletin was posted stating that the practice of pinning orders to the train registers must be discontinued at once, and that operators would personally deliver the orders to conductors of trains to which they were addressed.

I never did understand how the engineer on Number 4 came to accept those orders, but I will say that regardless of the tough reputation of the Santa Fe in regard to discipline, I have always had a secret admiration for the sense of justice and fair play displayed by the officer who assessed the discipline in that case.

I don't know who he was, but on account of long and faithful service and exceptionally good records, the guilty ones were merely handed a bunch of brownies and retained in the service.

Photo by David H. Mann, Box 282, Ogden, Utah

If You Have Ever Wondered What the Cab of an Old-Time Locomotive Looks Like, You'll Want to Study This View of the "William Bowker," Which was Borrowed from the Pacific Coast Chapter of the Railway & Locomotive Historical Society and Temporarily Rechristened "General McPherson" for Use in the Photoplay "Union Pacific"

A Genuine Railfan, Lucius Beebe Found That the Job of Being Technical Advisor to Railroad-Movie Producers Was Not Work at All. In Fact, He Enjoyed It Immensely, as You Might Gather from This Shot of Mr. Beebe In the Cab of the "General McPherson"

Union Pacific

By LUCIUS BEEBE

(Author of *High Iron, A Book of Trains*, and Technical Assistant to Cecil B. DeMille in the production of "Union Pacific," a Paramount Picture to be released in April)

IRON SPRINGS, Utah, is a desolate upland locale ten miles from Cedar City and thirty miles from the main line of the Union Pacific at Lund. It was selected by Cecil B. DeMille for the location shots for "Union Pacific" for a number of reasons. The background scenery provides both prairie and snow-capped mountain peaks closely resembling the Wasatch Range in which the action is supposed to take place. There is a spur of the UP into Cedar City on which but two freight trains a day are regularly scheduled so that the facilities of the railroad, placed at Paramount's disposal by President William Jeffers, did not interfere with regular traffic. The Iron Springs station and its surroundings, spurs, water tanks, etc., easily lent itself to redesigning to recreate the city of Cheyenne in 1868. There was a large UP hotel at Cedar City for the accommodation of the cast, technical men and executives; while the extras, cowboys, Indians and stunt men were housed in bunk cars. And last, but by no means least, the region is so desolate and so far from cities and highways that the filming was at no time impeded by such crowds of spectators, curiosity seek-

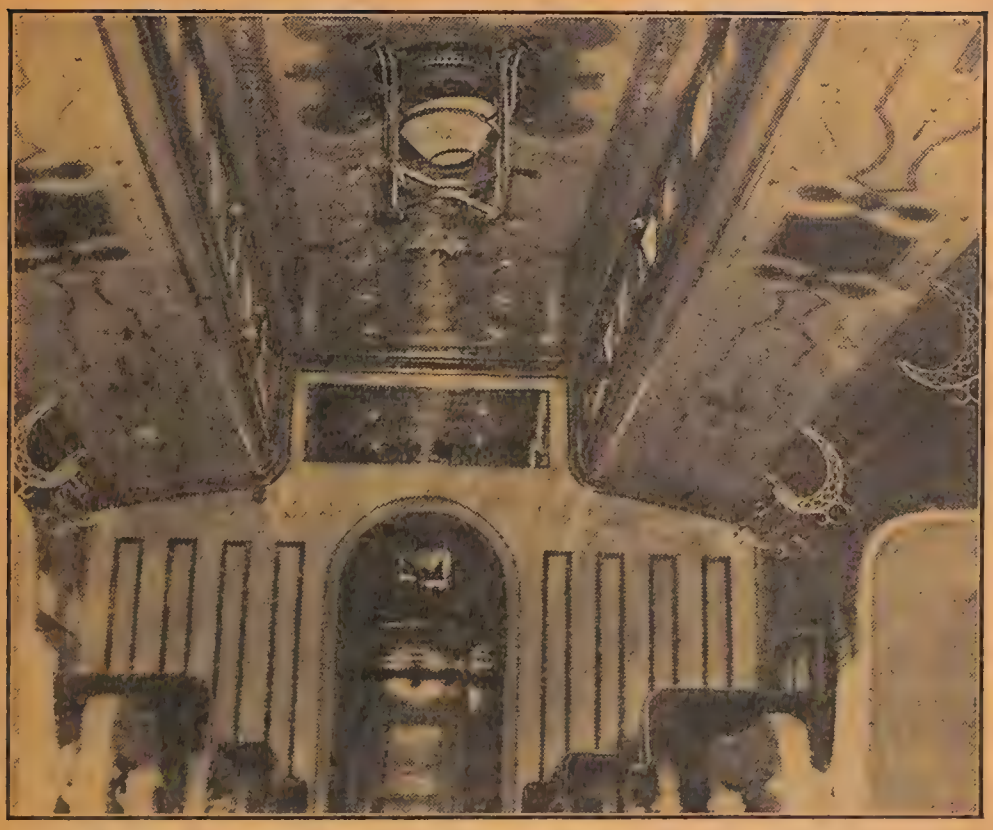


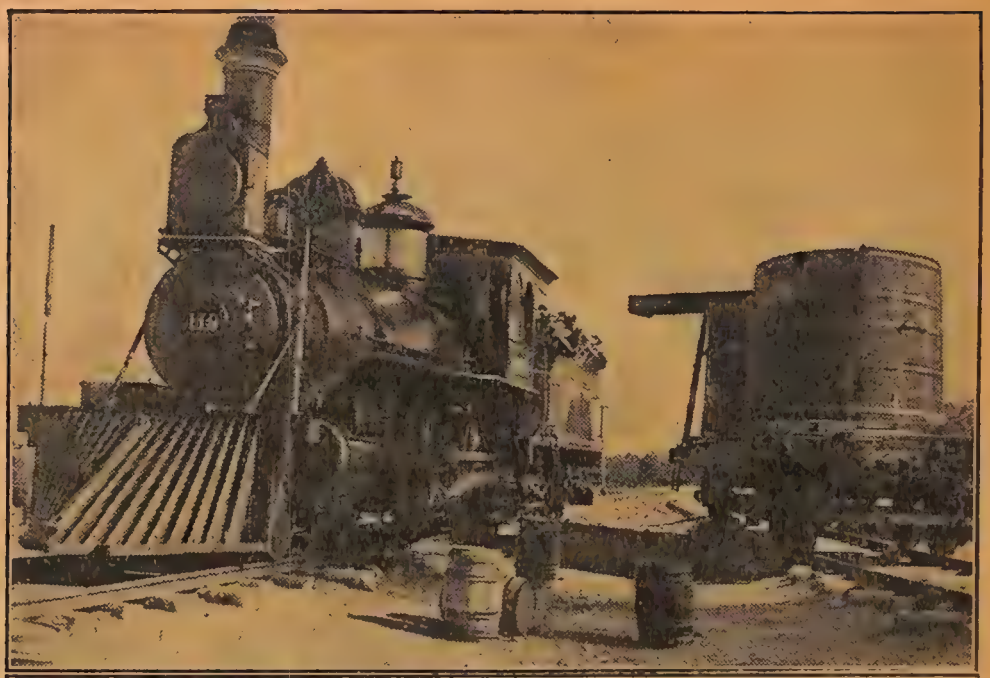
Photo by David H. Mann

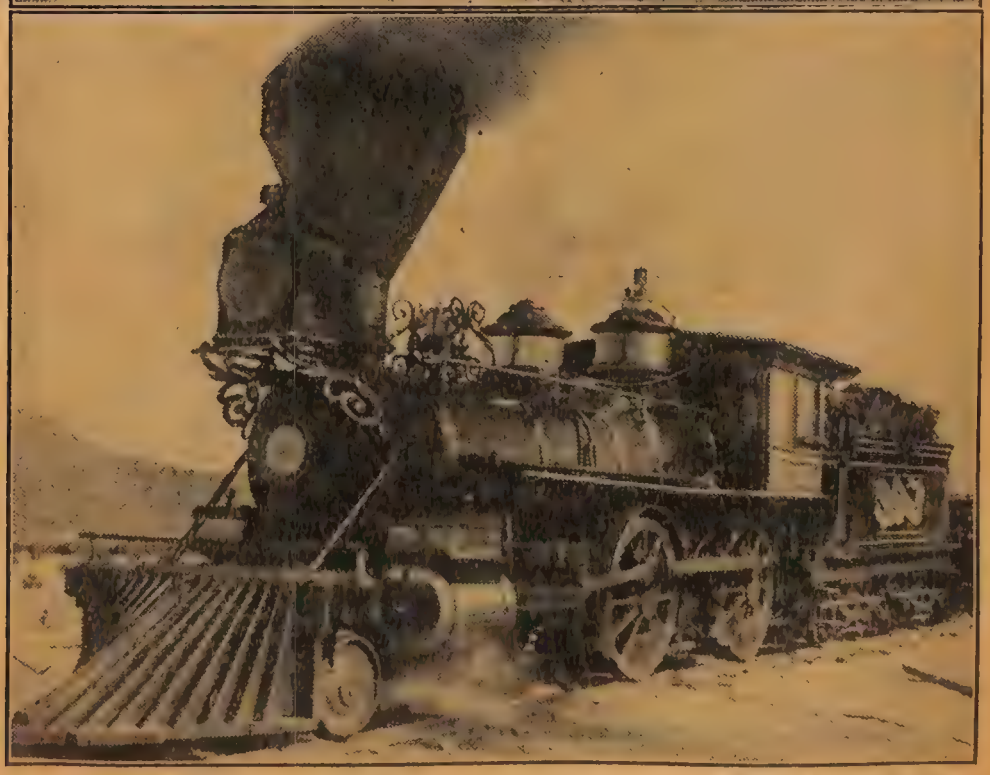
This Well-Preserved Old Passenger Coach, Decorated in the Baroque Fashion of Grandpa's Day, Was Borrowed from the Virginia & Truckee for the UP Cinema. The Lighting Fixtures, You Will Notice, Were Designed for Pintsch Gas, Which, According to Advertisements of the Period, Gave "a Soft, Steady and Brilliant Light, Absolutely Safe and Unchangeable under All Conditions." The Crescent-Supported Racks Which You See Were Ornate but Utterly Useless Except for Small Packages

ers and autograph collectors who proved a vast hindrance during Twentieth Century Fox's filming of "Jesse James" at Joplin, Mo., and thereabouts, early in September. (*See page 135.*)

"Union Pacific," screened with the full cooperation of the UP, will be the first grand-scale railroading picture since the introduction of sound films. It concerns itself with a romance amidst the construction excitements of the famed Union Pacific progress across the continent in the latter sixties; and its immediate action takes place between Cheyenne and Ogden in 1868-69 as General Jack Casement's Irish tracklayers race down the slopes of the Wasatch to meet the Central Pacific at the legendary junction at Promontory, May 10, 1869. Although much is made of the romance between Joel McCrea, cast in the role of "trouble shooter" for Oakes Ames and the other UP directors, and Barbara Stanwyck, playing the daughter of an old-time hogger, "Union Pacific" will still be a "must" for all railroad amateurs and probably the most authentic railroading film yet to be screened.

From the files and libraries of the West and with the assistance of a corps of technical experts, Mr. DeMille assembled an amazing amount of background material and properties for the film's atmosphere. A complete collection of the photographs of Savage, the Salt Lake photographer who filmed the Promontory scenes, was resurrected from oblivion. Three eight-wheelers





Photos by David H. Mann

One of the Three V&T Eight-Wheelers Which Paraded before Paramount's Movie Cameras Is Shown with an Antique Car. Such Cars Were Badly Needed on Western Roads Prior to the Building of Water Towers. A Crew Dipped out Water with Buckets and Poured It down the Spout into the Tank of Their Engine. The Other Photo Shows the "William Bowker"

Photo by David H. Mann

Cheyenne, Wyoming, the "Hell-Roaring" Frontier Settlement of Seventy Years Ago, Was Recreated by Paramount Studio Experts at Iron Springs, Utah. This Remote Spot Was Chosen Because the 66-Year-Old W. M. Jeffers, Now President of the Union Pacific, Said It Resembled the Old Cheyenne He Knew as a Boy. The Background Scenery at Iron Springs Provides a Rolling Prairie as Well as Mountains Similar to the Wasatch Range in Which the Action Is Supposed to Take Place

were obtained from the Virginia & Truckee, two of them bought outright and one borrowed. One of them was fitted with a balloon stack and correct period equipment; while another was redesigned with a straight stack, characteristic Stevens fluted sand dome, and numbered 119 for participation in the Promontory interlude. The *William Bowker* was borrowed from the Pacific Coast Chapter of the Railway & Locomotive Historical Society and rechristened, with a fine coat of scarlet paint and gold leaf, the *General McPherson* after the first locomotive on the UP roster.

Half a dozen period coaches, some of them from the Virginia & Truckee and some from the UP shops in Omaha, were completely reconditioned; and there were also unearthed a dozen or so boxcars of the era, tank cars carrying large wooden tub-type tanks, flats, blacksmith's cars and bunk cars. The date on most of this equipment is 1872, but it is essentially the same as that used in pushing the railhead west three years before. An immense store of minor properties also was assembled: Ames shovels, Colts and Starr's revolvers, Sharps rifles, old-time glass grenade fire-extinguishers which in the sixties were racked at each end of UP passenger coaches, signal lamps of the period, carpet bags, gold Albert watch chains for conductors and complete costumes for the actors.

And as a last touch of realism a track-laying gang recruited by President Jeffers himself from crack UP construction workers went up to Iron Springs under the

charge of Charlie Chamberlain, a division superintendent whose memory stretched back to the days of link-and-pin and hand braking, and who, for his role as track-laying boss, was fearfully and wonderfully made up in chin whiskers and a paddy wig. Mr. Chamberlain proved himself an actor of real distinction, as will be visible when the film is released.

President Jeffers decided, in the midst of the work of the Paramount location company, to run up to Iron Springs and see what was toward in the name of the Union Pacific. His private car was detached from the Pacific Limited at Lund and Mr. Jeffers journeyed up to location with the intention of staying, at the longest, a couple of hours. He remained three days, lending his tremendous knowledge of old-time railroading to the technicians and assistants working on the film and firing and driving the ancient equipment with all the enthusiasm of a juvenile railfan.

The action shots taken at Iron Springs include scenes of grading and track-laying, of life on the work and construction trains of the period, a train wrecked and burned by hostile Indians, and the rough and romantic existence of the frontier times in the saloons and gambling hells which constituted the "roaring towns" of the late sixties. Characters included in the film embrace General Jack Casement, Oliver Ames, President Lincoln, Leland Stanford, Charlie Crocker and Collis Huntington, as well as numerous other actual personalities shown at the Promontory ceremony which concludes the play.

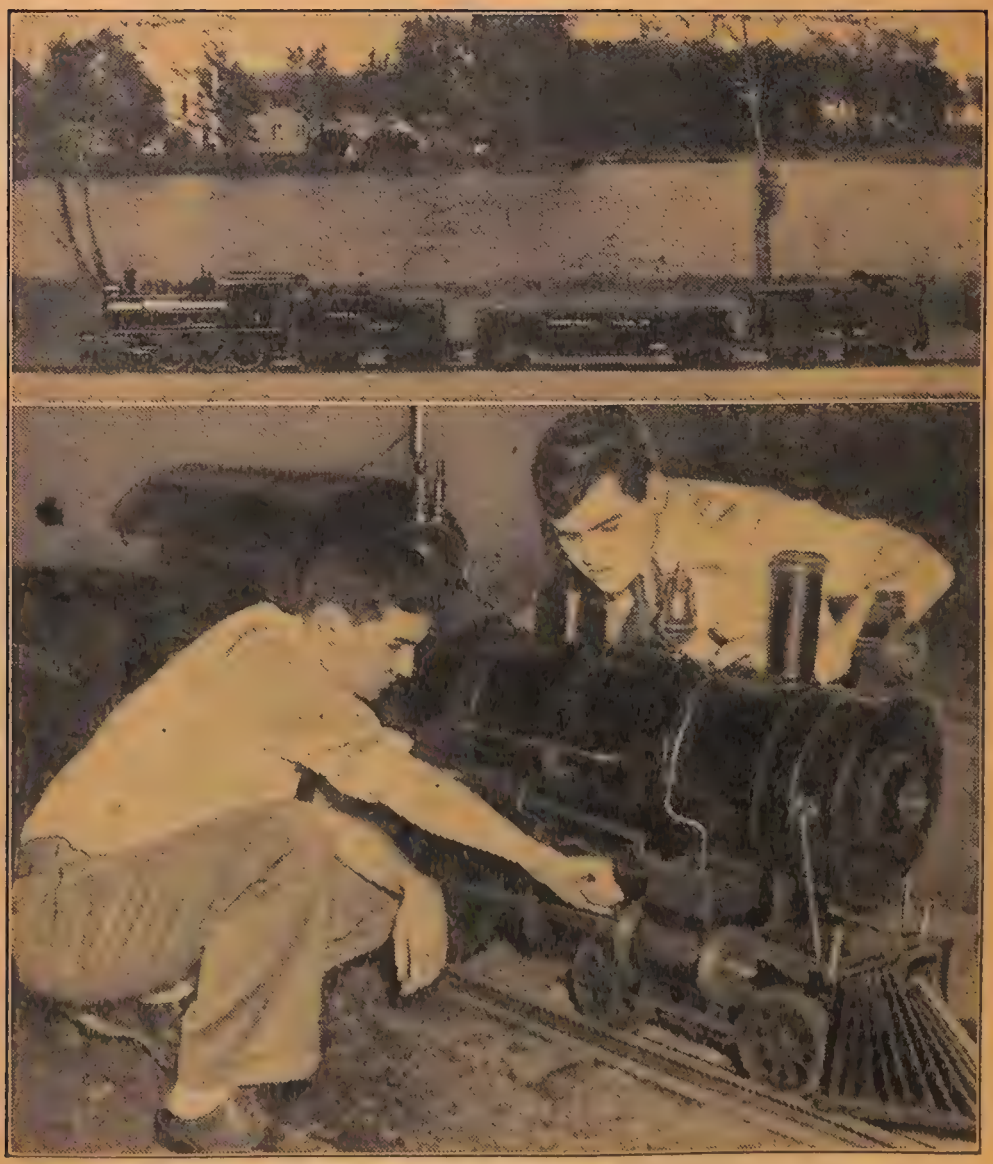
The really remarkable attention to detail and the expense gone to to make "Union Pacific" authentic in every aspect, save that it of necessity tones down the temper of frontier existence to a more or less decorous mean, assure it of the careful scrutiny of railroad men and fans. Occasionally there is an out-of-period device made necessary to heighten the drama of a given situation or conform to the requirements of the script, but they are few in number and relatively of little importance. The film, as seen from its production stage, bids fair to be a real representation of the epic of the UP construction and the railroad life of those historic times.

Photo by David H. Mann

President Jeffers of the UP Sent These Two Men to "Location" to Insure Historical Accuracy. "I've Seen Every Railroad Movie Ever Made," said Mr. Jeffers, "and All Were Full of Discrepancies. This One Is Going to Be Correct." (Right) His Special Representative, G. W. Taylor of Omaha. (Left) Charles A. Chamberlain, UP Roadmaster of Salt Lake City, Who Supervised Track-Laying and Even Grew a Beard, at the Director's Request, so He Could Play a Part in the Film

The RC, Built and Operated by Students

The Rensselaer Central Is a 9½-Inch-Gage Railroad Operating on the Campus of Rensselaer Polytechnic Institute at Troy, N. Y. It Was Built by a Group of About 30 Students, Who Are Shown Grading the Right-of-Way and Laying the Track. The RC's President Is James M. Fiske of Lancaster, Calif. In the Upper Photo He Is Working in Shirt-Sleeves at the Left Foreground, While in the Lower Picture He Is Standing, with a Hat On



Guy Stillman, Son of a Prominent Banker, Is Not Only Treasurer of the Rensselaer Central but Also Operates a Miniature Road of His Own, the Central Valley (Upper Photo), along the Shore of a Lake on the Stillman Estate at Barrington, Ill. In the Lower Picture We See Guy Tightening a Cylinder-Head Bolt on the American-Type Engine, 870, Pride and Joy of the RC, with Gen. Mgr. Charles R. Culp of New York City Looking On. Other Officers Are John J. Drislane, Albany, N. Y., Secretary; Wm. P. Hoffman, N. Y. City, Chief Engineer of Construction, and Frank E. Ryder, Buffalo, N. Y., Chief Engineer of Equipment and Motive Power. So Far 425 Feet of Track Has Been Laid, Some New, the Rest Acquired from an Abandoned Amusement Park. A Gondola and Flat Car Are Being Made Out of Old Trucks from the Same Park, and Plans Have Been Drawn for a Caboose. The 870, a Live Steamer Fired with Cannel Coal, Was Donated by an Alumnus. She Had Not Been Used in 25 Years, but Was Thoroughly Overhauled, and Is Still Serviceable. Built to One-Sixth Scale. Diameter of Drivers, 13 Inches. Cylinders, 2.37 by 4 Inches. Indicated Horsepower Is 4 at 100 Revolutions per minute. Length (Including Tender), 6 Feet. Width, 18 Inches. Height, 30 Inches

Farmers' Railroad

By FRANK DONOVAN, JR.

FOR years the motortruck concerns have been trying in vain to make substantial inroads in the peninsula section of southeastern Maryland that, as the map shows, lies between the Potomac River and the Chesapeake Bay. But this peninsula, which I should say is roughly shaped like a shoe, is, to use a crude metaphor, giving the trucking interests a kick in the pants. For the shrewd farmers in that territory are aware of an elementary fact that every student of economics knows, namely, that it is more efficient and less expensive in the long run to haul merchandise by rail than by truck. And so they are handing over the bulk of their business to the Pennsylvania Railroad and to a 24-mile feeder line of their own, the Washington, Brandywine & Point Lookout.

There used to be a third railroad on the upper section of this peninsula, the Chesapeake Beach line, but that was abandoned several years ago. These three roads, together with a circuitous water route, had a monopoly on transportation there prior to the coming of motor traffic and they were of inestimable value in developing the peninsula.

Digging into the history of the WB&PtL, I found it was originally called the Southern Maryland Railroad and as such was incorporated March 20th, 1868. Construction was begun at Brandywine, Md., on the Pennsy, in a southeasterly direction. The original intention was to build from Washington, D. C., to Point Lookout—hence the road's present name—but the sponsors fell upon bad times, went into bankruptcy, and emerged April 1st, 1886, as the Washington & Potomac Railroad.

Although most of the line had been graded as far as Point Lookout, only two segments of it were in operation. One extended from Chesapeake Jct., on the Baltimore & Ohio, eastward to the District of Columbia boundary. The other portion ran from Brandywine to Mechanicsville, Md., some twenty miles. At no time were the two segments ever joined.

Things went along pretty well until the turn of the century. Then the carrier became financially embarrassed and passed through another reorganization, July 27th, 1901, this time becoming the Washington, Potomac & Chesapeake Railway. Five years later the owners leased their tiny Washington Division to the Chesapeake Beach Railway for a term of 99 years.

Photo by Frank Donovan, 1919 Arch St., Philadelphia, Pa.
Looking Eastward at Mechanicsville Siding

But alas! the CB itself was abandoned about five years ago; all of its line east of Seat Pleasant has been ripped up, and the old CB now carries on as part of the East Washington Railway.

Meanwhile, the Brandywine segment continued operation until the very last day of 1917, when the World War had so cut off the overseas markets for farm products that the struggling WP&C again went down for the count.

The charter was abrogated, a new receiver was appointed. The latter scraped around frantically for a while for financial backing to put the road on its feet again; but capital, with greedy eyes on ammunition and shipbuilding contracts, turned a deaf ear to his plea; and there was nothing to do but call in the junk men.

But while a salvaging firm was beginning to tear up the road, the farmers did a lot of serious thinking. They figured that even a problem railroad was better than no railroad at all. And so they rushed to court for an injunction and then in June, 1918, they bought back the road from the junk men, changing its name to Washington, Brandywine & Point Lookout.

The new proprietors went after fixed charges like a flying tackle in the last quarter. Henceforth the line was to be operated for public service, any profit to

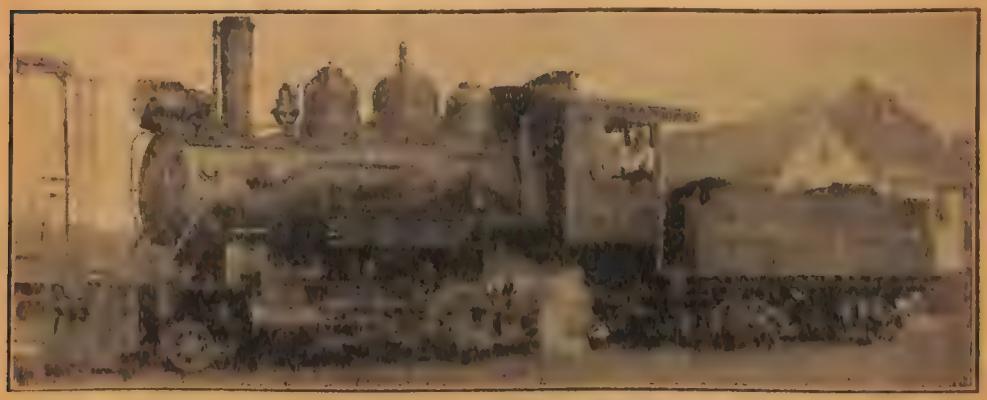


Photo by Bruce Fales, 1209 E. St., Silver Spring, Md.
No. 5 of the WB&PtL, a Diminutive Mogul, Is No Longer Used in Regular Service, but Stands Ready for Heavy Business

Photo by Frank Donovan

No. 10 Leaving Mechanicsville Siding for the Return Trip to Brandywine

be merely incidental; and thus it has been ever since. The company borrowed $50,000 from the Government, a relatively easy matter in the "prosperous" war years, and sold stock to public-spirited farmers.

"And how does the road operate?" you ask. Well, I took a trip there recently to find the answer. My well-thumbed copy of the *Official Guide* showed the train leaving Brandywine every Tuesday and Friday at 9.35 a.m. A letter from the general manager, W. F. Chesley, Jr., confirmed this schedule but added it was for freight only. He assured me, however, that I would be permitted to ride the line free of charge.

So I went there. Friday morning found me conferring with the Pennsy agent at Brandywine. "Where is the train?" I wanted to know. I could neither hear a whistle nor see any smoke. The station agent smiled and pointed to the track.

Sure enough, there was old No. 10 poking her head through the pines. Instead of a steam locomotive I saw a trim little gasoline engine. And in lieu of the Baldwin nameplate I observed in large letters F.W.D., meaning "four-wheel drive"—a type extensively used in the army.

Well, I piled on board—or, rather, climbed into the engine cab, such as it was. After a half-hour of shunting and loading express, the conductor gave the highball and we were off. The old girl quivered and shook with her load of four cars. Soon we passed the Lilliputian enginehouse, in Brandywine, which sheltered the other half of the road's motive power, a Baldwin Mogul, built in 1921. Nearby stood a four-wheel caboose and a section man's speeder. This composed all the WB&PtL's rolling stock, save for a disused Mack bus on flanged wheels, rusting away in Forrest Hall.

As we jounced along, Brakeman Ray Willitt explained that the "trains" seldom exceeded 25 miles per hour, even on down grade. For that reason, he said, the roadbed does not require the "manicuring" of a Class I carrier and does not get it. Then, too, the light rails, 60 and 70 pounds per yard, are cheap and easy to handle.

The crew consists of three stalwart farmers, viz., the brakeman, Engineer John Bond and Conductor Tom Early. These men work their farms four days a week, serve on the railroad for another two, and

rest on the seventh. Since agriculture is not unionized and this is essentially a farmers' road, the employees regulate their own wage scale. The few station agents gladly proffer their services for several hours a week at a modest figure.

To proceed with my trip, the brakeman, noting my discomfiture in the hot, noxious atmosphere of the "cab," suggested that I continue my study atop a boxcar. This was jake to me, because it was a typical Indian summer day, and so I scrambled out on deck. Despite the lurching and swaying of our car, the roadbed appeared to be in fair shape, having no sharp curves and very moderate grade. Our journey was uneventful. The conductor explained that with the advent of the new motive power, the farmers' pumps along the right-of-way have supplanted the costly water tanks.

On the return trip he pointed out a large, well-built farmhouse situated on a bluff—the highest in St. Mary's County—at Charlotte Hall, adjacent to the right-of-way. This sturdy old building on a 300-acre farm contains the office of the railroad and the residence of its general manager. I decided to visit the place. Hardly had I alighted when Mr. Chesley met me. He related how he had started railroading as a telegraph operator on the Kansas City Southern before he turned to farming. He is the only active executive on the road. The president, W. Bernard Duke of Baltimore, holds only a nominal position.

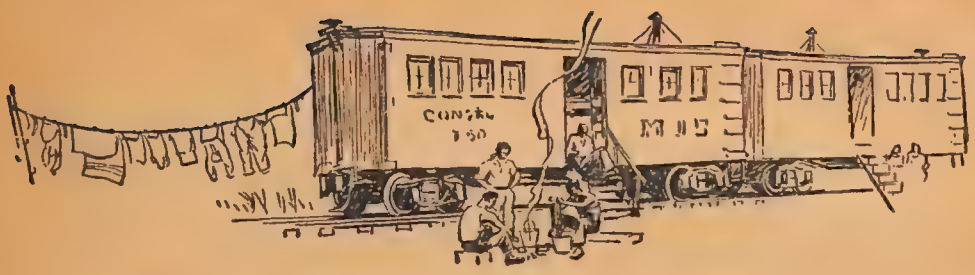
But the job of general manager on a short line is no sinecure. Once during steam operation the lone engine broke down, and Mr. Chesley personally labored for thirty days repairing her. He actually worked and slept on the job, refusing to go home until the task was completed.

A word or two might be said concerning the finances of this community railroad. To date the WB&PtL has just about held its own. The high operating ratio of 112 per cent for 1936 was due chiefly to rehabilitating the track. In 1937 this was cut to 92 per cent. According to Mr. Chesley, the substantial operating economy owing to the application of gasoline should put the road "in the black" in the near future, although the accumulated deficit is now about $20,000. Since most of the 375 stockholders are shippers, they profit from cheap rail transportation rather than from dividends of stock.

With the exception of the general manager, all of the company's eleven employees augment their modest compensation by working their farms. I do not believe the railroad will ever be extended to Washington or to Point Lookout. On the other hand, there seems to be little likelihood that it will be abandoned again.

Photo by Bruce Fales

Though the WB&PtL Was Leased to the Chesapeake Beach RR in 1906, the Chesapeake Beach Gave Up the Ghost First, and Was Abandoned a Few Years Ago. This Is No. 5, One of the CB's Eight-Wheel Passenger Engines, Which Was Scrapped and Sold to Japan



"Nice Work, Mike!"

The Super's Words Give Da Lee a New Slant on the Meaning of Loyalty

By CHARLES LAYNG

"RISE and shine, ye Oriental galoots!" shouted Mike Conners, extra-gang foreman on the Eastern & Western. "There's a bridge out at Coyote Arroyo an' the main line is sawed in two an'—but ye don't understand me anyway, so get up an' out of this an' let's get to work!"

In obedience to a few well-directed kicks at the laggards closest at hand, Mike's Chinese crew rolled out of their bunks, muttering strange and weird oaths and calling, no doubt, upon great Confucius to protect them from this Christian devil with the heavy boots. A queer lot they were. But if Mike thought all of them didn't understand him, he was mistaken. Da Lee understood exactly what the boss was talking about, and could, in fact, when he wanted to, speak much more perfect English than Mike's thick brogue. However, he did not reply, but crowded in with the rest of them to the mess car, where the sleepy and grumpy cook was passing out hot coffee.

They needed something hot in their insides, did the unfortunate extra gang, for it was four o'clock of an early spring morning in Wyoming; and spring in Wyoming can be a very different season from the one the poets sing about as being full of soft and gentle breezes. The breeze that was howling across the high plateau now was anything but mild and gentle. Moreover, it was driving before it a howling rain that had in it the bite of hail, for there was still plenty of snow in the mountains.

It had been cold and uncomfortable on the siding around the camp cars, but was doubly so out at the arroyo. That gully, dry as a bone and swirling with dust for most of the year, was a raging torrent now; and only a few broken gaunt timbers sticking above the flood like tombstones were reminders of where the bridge had been.

Nothing could be done about bridging the gap until the torrent had spent itself; but this, Mike knew, could happen any time in the next hour or two,

for these Wyoming spring freshets disappeared as rapidly as they came. So he set the shivering, grumbling gang to work getting things ready, unloading stringers and rail, and lining everything up so that he could get some sort of temporary structure flung across that would hold a train, just as soon as the water went down. The Eastern & Western wasn't exactly a heavy-traffic road, but Number 5 was due by Coyote Arroyo that morning, and Mike didn't want her delayed.

The rain lasted just long enough to drench the whole gang with a devastating thoroughness, and its foreman as well. For, although Mike howled and screamed, and not infrequently used a heavy boot on an Oriental rear, he himself did everything he asked his laborers to do. When there was heavy lifting to be done, Mike's brawny arms and shoulders were worth at least two coolies in his own estimation; and there was plenty of heavy lifting.

THE gang had hardly finished getting ready before the torrent spent itself. From a boiling maelstrom it quieted down to a placid stream, and then to a mere trickle, lapping gently about the ruined bridge.

"Into the mud, ye slant-eyed sons of cross-bred mothers!" Mike roared. "Let's get some piles down—work!"

In obedience to the roars of his bull voice they worked. They worked to such good advantage that, some hours later, when the flustered superintendent arrived on Number 5, he was able to send that train creeping across the temporary structure on time and in perfect safety.

"Nice work, Mike!" he yelled from the platform as Five disappeared in the distance; and the big foreman glowed with pride.

He was still glowing when the belated arrival of the bridge gang released the coolies for their regular work of building the Bison branch, and, in the absence of anyone else to brag to, he summoned Da Lee, the interpreter, to his side as they rode out to the job.

"Mighty swell job we do chop-chop early-on, huh?" Mike lapsed into the pidgin English of which he was inordinately proud.

Da Lee, like most of his race, was a philosopher. Also, like his yellow brethren, he was an intense individualist. But, unlike them, he did not dismiss these crazy white men as fools, with ways beyond understanding. Instead, he did his best to try to discern the motivation in their queer, apparently reasonless actions.

"But was it worth it?" he inquired.

Mike stared at him in astonishment. "By all the saints—why ain't you ever told me ye could speak rale English?"

"Because you never asked me, sir"

In a very different way, but also like most of his race, Mike Conners was a philosopher, too. He glanced keenly at his companion, his sparkling blue eyes searching the opaque brown eyes beneath the heavy lids.

"What d'ye mean, was it worth it?"

"It wasn't our job to put up that temporary structure. That's what the bridge gang—"

"Yes, but—"

Da Lee held up a restraining hand.

"Let me finish, sir," he requested politely. "You went out there and worked in the mud and wet like a dog. You took a lot of material from the storehouse for which you'll have to account; and you'll be chastised for it, with a chance of being discharged besides. You did all this at four o'clock of a cold morning when it wasn't your job. Why?"

FOR a moment, Mike considered telling the dumb benighted Chinaman exactly where he could go, but a second glance at Da Lee's earnest face convinced him that the interpreter was neither dumb nor benighted, and actually wanted a solution of what to him seemed a perplexing problem.

"Because, me yellow friend, I knew that those bridge gang Swedes couldn't stir their stumps fast enough to get there without delayin' Number 5 half the day."

Da Lee smiled uncomprehendingly.

"I still ask why," he said. "I have heard you lecture for hours on the bloated capitalists who ride trains such as Number 5, and how they grind the working man under their heels. After all, a few hours delay to such as they—"

Mike shrugged his shoulders.

"Sure," he admitted, "I'm a Socialist in politics, but this ain't politics, me fine heathen Chinese; it's railroadin', an' that's somethin' else again."

"But how will you be rewarded for your trouble and all the explaining you'll have to do?"

"I've got me reward already. Didn't ye hear the super himself—an' a foine lad he is, too—say to me: 'Nice work, Mike'?"

"I heard that, but if you'll pardon me, sir, I still ask why."

The extra gang foreman puffed furiously at his pipe for a while. "It's loike this," he said, at last, "it's loyalty; that's what it is. Ain't you ever loved a woman—"

Da Lee smiled and shook his head. "With our regard of women as despicable creatures, sir, I'm afraid that won't do."

"No, mebbe not. Well, then, don't ye blasted Chinks have any loyalty, any love for your country either?"

The tall slender Da Lee drew himself up, and his eyes flashed.

"What do you suppose," he demanded angrily, "that I, an aristocrat, am doing here as a common laborer, if not to aid my country? I'm trying to teach my countrymen that even an aristocrat can appreciate the dignity of labor, that—" He stopped suddenly, and made a peculiar apologetic bow. "I'm sorry, sir, I forgot myself."

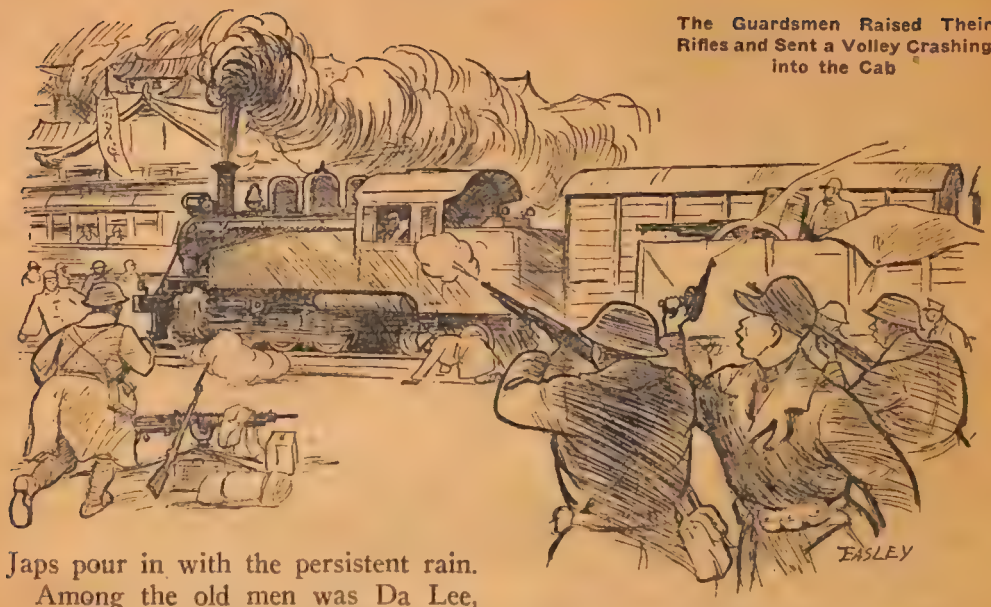
"That's all right, Lee, but now I think ye know why I did it, reward or no reward."

Da Lee frowned thoughtfully. "Yes, I think perhaps I do."

THE years went by; and Da Lee, with a degree in mechanical engineering and a vast practical knowledge of railroading, went back to his own country, to cease being a heathen Chinese and to resume his status as wise master of the development of the northern province of which his family had been governors for generations.

It is a far cry from Coyote Arroyo in the shadow of the Grand Tetons to Pao-Ling in the shadow of the Great Wall; but, although the Coyote Arroyo bridge went out forty years ago and the Pao-Ling incident happened only the other day, the weather was much the same and Da Lee was an actor in both dramas.

A driving wind sent a howling rain into the faces of a group of stolid Chinese standing on the station platform at Pao-Ling. The Pao-Ling yards were full of troop trains, unloading Japanese soldiers, for the invaders had just captured the town after a bitter struggle. The wet crowd on the platform included no young fellows—they were off to the wars—only women, children and old men, huddling together and watching the conquering



The Guardsmen Raised Their Rifles and Sent a Volley Crashing into the Cab

Japs pour in with the persistent rain.

Among the old men was Da Lee, bearing his years lightly, disdaining to leave the home of his ancestors, dressed as a common peasant. Some of the Chinese made a bluff at waving bedraggled Japanese flags, to appease the invaders, but old Da Lee was not one of these. He seemed just as apathetic as the rest, but his eyes were active, taking in the scene.

Suddenly, behind their screen, the embers of his eyes took on a new blaze. An ammunition train pulled slowly into the station, and the Japanese crew piled off, to hurry over to the recently set-up mess tent, where bowls of hot tea and steaming rice awaited them, to put new life into their half-frozen bodies. Atop each car stood a soldier of the Mikado, blue with cold, but still standing his post at the brake wheel until he should be relieved.

Da Lee's eyes gleamed as he looked at that wealth of ammunition. If only the gallant Chinese army—such a few miles away—had that trainload of shot and shell, what prodigies they could accomplish! How pitifully short of ammunition they were!

The old aristocrat moved about uneasily, and partly withdrew his hands from the long sleeves of his voluminous padded jacket. Then he observed a bustling Japanese captain stop to regard him suspiciously, and his wrinkled face became blank as he gazed off vacantly at the distant mountains. Impassive he seemed, but within every nerve itched to be doing something, had itched for several months; but he was ancient now, ancient and respected, but totally unfit, the doctors said, for military service.

If only there were some way of getting that ammunition train down the line just a few miles to where the Chinese army was stubbornly, almost hopelessly, digging itself in.

SUDDENLY the brown eyes of Da Lee lit up again. They were changing the guard on the ammunition train!

Eagerly, as they saw their relief coming, the half-frozen sentinels clambered down from the tops of the cars to meet those who were to take over. For one brief moment the train was

empty of guards and the cab was empty of its crew. In that brief moment, praying to Confucius that he had not forgotten the railroad knowledge gained forty years before on the Eastern & Western, Da Lee acted. With an agility surprising in one of his years, he climbed up into the cab and groped for the throttle. Frantically he opened her up, and the ammunition train began to move! Then, rapidly gathering speed, Da Lee and his precious cargo headed south—south to where the Chinese army grimly waited for another attack, little expecting such a windfall as this.

For a moment the Japanese stood gaping in their astonishment, stunned into silence. Then, furiously, with no regard for life and limb, several of the small stocky guards hurled themselves at the cars as they went whizzing by, trying to board the rapidly moving train. Their stiff fingers, blue with cold under heavy gloves, missed the precarious handholds and more than one of them was plunged downward to be ground beneath the wheels.

At a sharp command, the relieving guardsmen halted, raised their rifles in unison, and sent a volley crashing into the locomotive cab, just before it got out of range. The gray head of Da Lee disappeared from the cab window, and his cap went floating slowly down to the ground, but still the train plunged on, outdistancing the motorcycle that jounced along the ties after it, for a short distance.

A few minutes later the ammunition train came roaring down the track to where an astonished Chinese army gazed at it in utter disbelief. In the cab Da Lee lay sprawled, with a rapidly widening patch of red on the back of the jacket, padded against the wind but not against the whining bite of steel-jacketed bullets. One arm was flung against the firebox door, blistering, and the pain brought the old man to some return of his senses.

Slowly he pulled himself up into the driver's seat again, and the shadow of a smile creased his wrinkled countenance as he saw that the train was now within Chinese lines. With a supreme effort he brought the locomotive to a stop, and then staggered down from the cab to fall at the feet of a hurriedly approaching general.

That worthy, in wildly enthusiastic tones, poured forth a torrent of excited congratulations. But to Da Lee's ebbing consciousness, as he lay at the great war lord's feet, the familiar Chinese words penetrated only dimly. Somehow they seemed to come to Da Lee in a strange foreign tongue.

"Nice work, Mike!" is what the war lord seemed to be saying.

The Old Gandy Dancer

I HAVE tended track for many years
And earned my daily bread,
Though there's never a day of all my days
But whitens my tough old head.
I have given my sweat to rails that yet
Seemed never to suck their fill;
If work be the price of liberty,
Rail-gods, I have paid the bill.
There's never a train steams westward now
But blows with a haunting cry;
There's never a train rolls eastward now
But thrills me where I lie.
And deep are the hollows in my cheeks
As Time swings on his way;
If age be the price of liberty,
Rail-gods, you have had your pay.
I may tamp and spike till the crack o' doom,
And heaven alone knows why,
I may sweep the snow with a stubby broom
In a blizzard that hides the sky.
On the stony ramp, in the heat or damp
I am oozing the crimson sweat.
If blood be the price of liberty,
Rail-gods, I have paid the debt.

—Earl F. Baker, Kokomo, Ind.

By the Light of the Lantern

Ask us what you want to know

RAILROAD questions are answered here without charge, but these rules must be observed:

(1) Not more than two questions at a time. No queries about employment.

(2) Always enclose a self-addressed, stamped envelope, to facilitate our getting in touch with you if necessary. We will print only your initials.

(3) Don't be disappointed if answers do not appear at once. They are printed two months before date of issue.

AT what limit (in terms of pounds) does the dynamic augment of a steam locomotive become serious?

(2) *I notice that many of the new 4-8-4's and 4-6-4's have rather heavy reciprocating parts. If low dynamic augment is desirable, why aren't those parts made of lighter materials?*—J. M., Toledo, O.

(1) Depends upon the type and weight of track and the weight on the driving axle; hence any absolute figure is meaningless. What engine builders and designers are trying to do is to reduce the dynamic augment; if 30,000 pounds at 90 miles an hour is bad, they try to keep the figure to perhaps a third of that. The New York Central's latest 4-6-4's show only 9,000 pounds at 90 miles an hour, for instance; and the ACL's new 4-8-4's, about 10,000 pounds at 80 miles an hour.

(2) You can't tell by looks, for one thing. Generally speaking, the newer engines with big wheels and enormous rods have less dynamic augment than some of the light old-timers. Light-weight rods and parts, both of the roller bearing and conventional types, are still somewhat experimental; and a road that doesn't want to fool around won't bother with them if conventional rods will fill the bill.

✣

F. A., Maben, West Va.—According to our best information, the Pennsylvania's new high speed steam passenger locomotive is of the 6-4-4-6 wheel arrangement, instead of the 4-4-4-4, as previously announced. At the time this was written it was reported to be just out of the shop.

(2) The *Broadway Limited's* fastest scheduled time is from North Philadelphia to Newark, 76 miles in 64 minutes (average 71.2), and from Englewood to Fort Wayne, 140.9 miles in 120 minutes (average 70.5).

✣

G. B., Erie, Pa.—About all we can say concerning the Pennsylvania's aversion to boosters is that it doesn't seem to like them. This road is well-known for its determination to keep its motive power simple and standardized; no doubt it feels that a booster would be superfluous for most purposes, or at any rate would be no more than a concession to comfortable starting. As long as it can get along without them, apparently it will do so.

(2) What to do with the steam locomotives released by electrification is hardly a problem for the Pennsylvania, since most of the older steamers are obsolete or worn out. Compared to other large roads, the Pennsylvania actually has a very small proportion of new steam engines, and hence if anything needs more.

✣

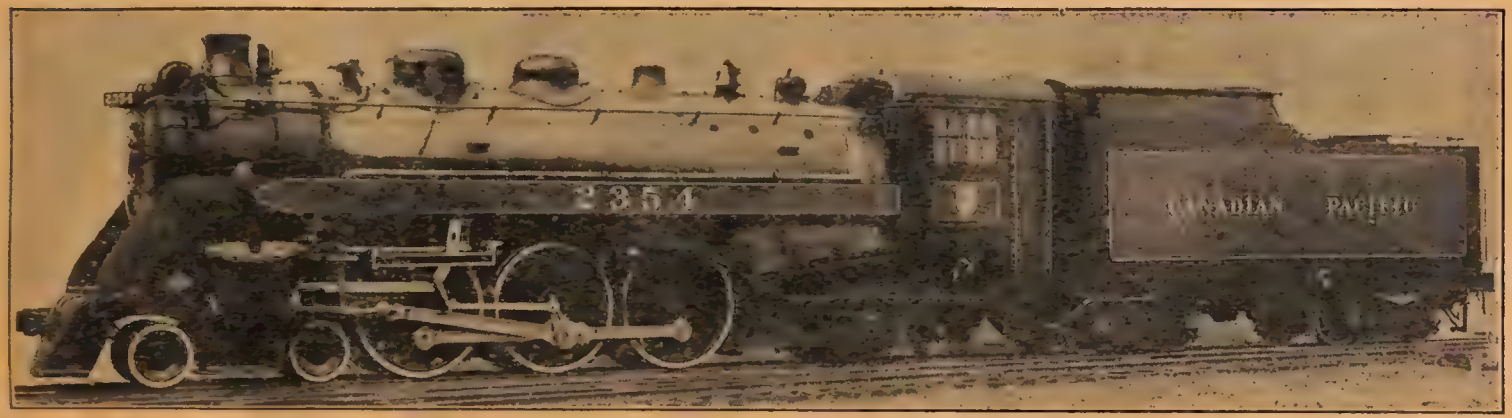
H. P. C., McCamey, Texas—The distance from Jacksonville to Miami, Fla., over the Moultrie Cutoff of the Florida East Coast is 346 miles. Thus the total mileage from New York City to Miami via the Baltimore & Ohio —RF&P—ACL route would be 1348; 224.6 to Washington, 116.5 to Richmond, 661 to Jacksonville, 346 to Miami.

✣

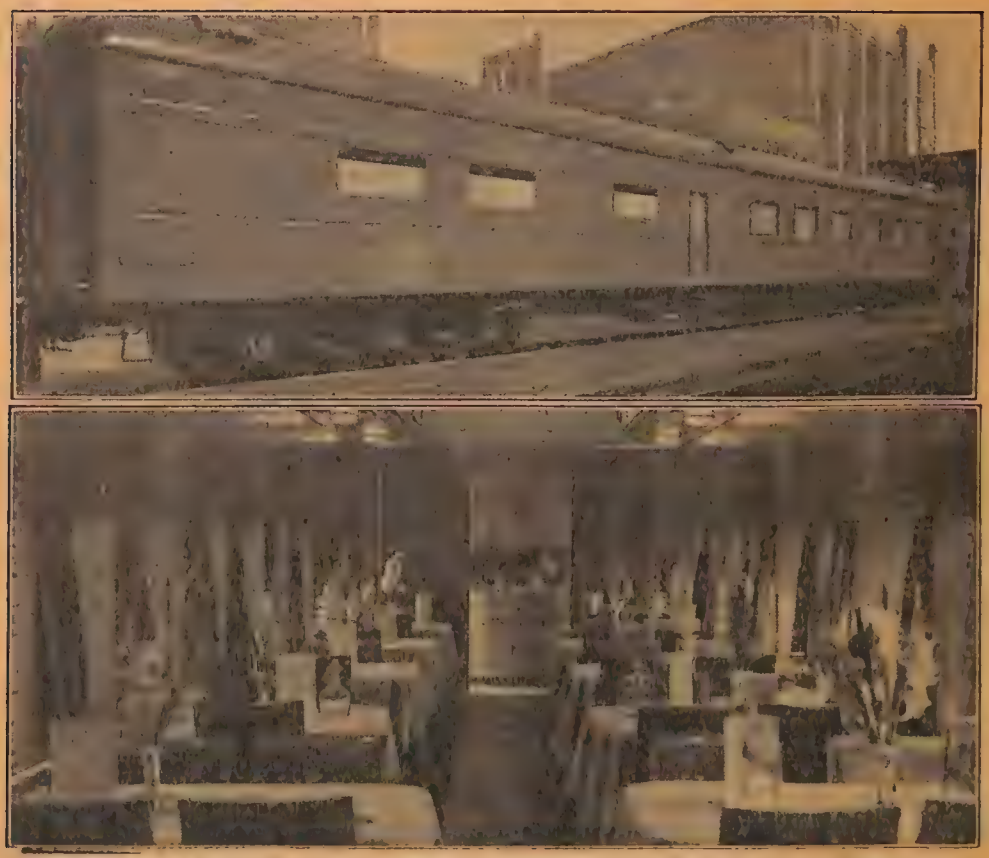
B. W., Talkeetna, Alaska — The electric switch used by street railways is activated by a break in the current as it runs from the trolley wire to the rails through the motorman's controller. When the car rests on or passes over

New Power for the Canadian Pacific

One of the Ten New Streamlined 2-10-4 Type, 5000-Horsepower Engines, the Heaviest and Most Powerful in the British Empire, Built at Montreal for Passenger and Freight Service in the Rocky Mountains. They Have 25 x 32-Inch Cylinders, 63-Inch Drivers, 285 Pounds Pressure, Weight 447,000 Pounds without Tender, Exert 90,000 Pounds Tractive Force with Booster, Can Haul Twelve Steel Cars (1050 Tons) Up a 2.2 Per Cent Grade



For Its Lighter Passenger Service It Has Purchased 15 Locomotives of the Pacific or 4-6-2 Wheel Arrangement. They Have 22 x 30-Inch Cylinders, 75-Inch Drivers, 275 Pounds Pressure, Weigh 316,000 Pounds without Tenders, Exert 45,000 Pounds Tractive Force



The Canadian National's Five New Dining Cars, Constructed by the Canadian Car & Foundry Co., Are Among the Finest in North America. They Are Painted Light Green; and the Interiors Are Finished in Chaste but Effective Applications of Prima Vera, Araca, Cherry and Walnut Woods. The Cars, Which Weigh Ten Tons Less Than Ordinary Diners (About 90 Tons), Are Used on the International and Ocean Limiteds

a certain piece of track insulated from the rest, he simply shuts off for a moment and then opens his controller—if he wants the position of the switch to change.

✣

C. R., Toronto, Canada—The largest streamlined steam locomotives in the world are the Southern Pacific's 4-8-4 type machines which haul the *Daylight*—those of the Canadian National are very much lighter and smaller.

(2) The largest and heaviest tenders on the Canadian National are those on the 5700 series (4-6-4 type). Containing 14,000 imperial gallons and 20 tons of coal when full, they weigh 305,800 pounds.

✣

H. D. and X. Y.—The Baltimore & Ohio now owns six Diesel-electric engines of 3600-horsepower, used on the *Capitol*, the *National*, and the *Royal Blue* limiteds. See page 12 for data.

(2) So far as we know, the Baltimore & Ohio has done no work on the 4-2-2-2-2-4 type, 16-cylinder steam engine it has planned. If so, financial difficulties probably are the answer.

✣

J. E. C.—We don't quite understand the term "dual-equipped" as applied to steam engines. Dual-equipped with what? A dual service locomotive is one used in both passenger and freight service.

✣

K. E. H., Huntington Park, Calif.—We don't pretend to be an oracle, nor to answer questions which a railroad's own officials can-

not honestly answer. So we can't say when if ever the Pennsylvania will electrify the line from Harrisburg to Pittsburgh. It is entirely possible that doing so, now that the Pennsy has gone as far as it has with electrification, will be the cheapest expedient in the long run. As for the line from Harrisburg to Baltimore, that would seem to be next.

(2) At the time the Pennsylvania was planning its 4-8-2 type engines, the story goes, it wanted to use 80-inch drivers, but found it could not get them around the sharp Horseshoe Curve. Therefore it compromised on 72-inch drivers.

✢

G. E. L.—Bronx, N. Y.—The description "26 x 28-inch cylinders" means that the cylinders of the locomotive are 26 inches in diameter and 28 inches long—or rather, that the piston has a stroke of 28 inches.

✢

A. K., Miamisburg, O.—The Lackawanna & Wyoming Valley (The "Laurel Line") runs from Scranton to Wilkes-Barre, Pa., 22 miles. It was chartered in 1913 as successor to the Northern Lackawanna, which dates back to 1901.

✢

W. R. D., Jr., Detroit, Mich.—The East Jordan & Southern was incorporated in 1901, opened same year from East Jordan to

She's O.K.—and the Sanders Are Working! Unless The Driving Wheels of a Locomotive Grip the Rail They Are Useless, and Often They Cannot Grip the Rail without the Aid of Sand. Stored In the Front Dome on Top of the Boiler, It Flows Through Pipes to the Rails; and One of the Most Important Duties of the Engine Crew Is to Make Sure the Sanders Are Working

Bellaire, Mich., 19 miles. It has three locomotives. Operated in connection with the East Jordan Lumber Co., it earned big dividends in years gone by, but is now running with a deficit.

✣

A. L. B., Hempstead, N. Y.—The Georgia & Florida, which operates between Greenwood, S. C., and Madison, Fla. (408 miles with branches), was incorporated in 1926 to acquire the old Georgia & Florida Ry., incorporated in 1906, and which a year later acquired the Augusta & Florida, the Millen & Southwestern, the Douglas, Augusta & Gulf, the Nashville & Sparks, and the Valdosta Southern. It built the line to Greenwood in 1929. It has not been doing well; operating ratio is very high, and the total deficit is over six millions.

✣

P. Z., Peoria, Ill.—The Illinois Midland, which ran from Terre Haute to Peoria, 173 miles, was a consolidation (in 1874) of the Peoria, Atlanta & Decatur (inc. 1869, opened 1874); the Paris & Decatur (opened 1872), and the Paris & Terre Haute (opened 1874). It is now part of the Pennsylvania.

✣

M. E. V., Plainfield, N. J.—Men in engine or train service cannot work more than 16 hours straight by Federal law. If they are caught on the road before their runs are completed, they have to tie up at the first convenient place.

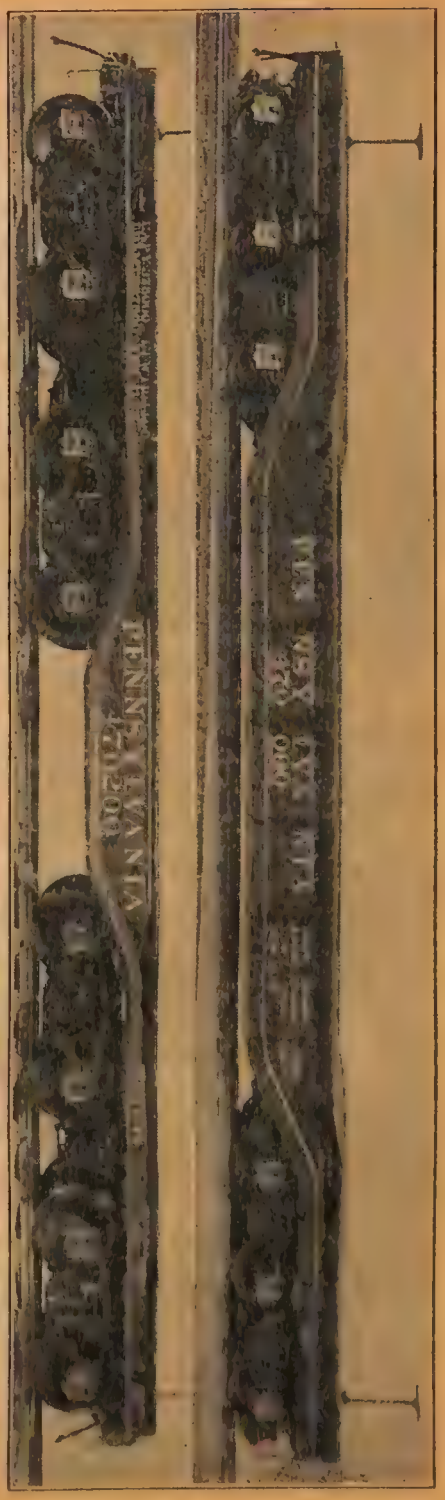
✣

ABOUT two years ago an inferior type of superheater on an English locomotive caused the boiler to explode, killing the engine crew. How did this happen?

(2) *What are the specifications of Toronto, Hamilton & Buffalo 4-6-2 type engines?*—E. H., Hamilton, Canada.

(1) Your description of the affair seems rather inadequate. We don't see how a superheater ordinarily could have anything to do with causing an explosion. The superheater is simply a set of tubes, installed in the boiler flues, through which the steam passes and is superheated on its way to the cylinders. Hence it possibly couldn't have much to do with the water level of the boiler, which is at the bottom of most boiler explosions.

(2) Nos. 15 and 16 have 24 x 28-inch cyl-



New Heavy-Duty Freight Cars of the Pennsylvania, for Hauling Large Castings, Generators, Boilers, Armor Plate, Etc. Upper Is the "Well-Hole" Type, Weighing 46 Tons and Able to Carry a Load of 125 Tons. Lower Is the Flat Car with Four Trucks, Weighing 52 Tons and Able to Carry a Load of Almost

Observation-Lounge of the Baltimore & Ohio's Rejuvenated "Capitol Limited", Which Operates Between Chicago and Washington

inders, 69-inch drivers, 200 pounds pressure, 39,700 pounds t.f., built at Montreal in 1923. No. 11 has 23 x 28-inch cylinders, exerts 36,500 pounds tractive force.

✣

H. F. R., Niagara Falls, N. Y.—The Suffolk & Carolina was a 3½-foot gage road which was chartered as the Nansemond Land, Lumber & Narrow Gage Ry. in 1873. The name was changed in 1874, when it was constructed from Suffolk to Montrose, 39 miles. It is now part of the Norfolk Southern.

✣

R. H., New Hyde Park, N. Y.—The Lackawanna's new 1631 series are numbered 1631-1650. They can haul 150 loaded cars of 50-ton capacity on perfectly level, straight track, but naturally are held to less according to the grade and curvature.

Additions and Comments

THE photo on page 63 of the January issue, which purported to show the only Baldwin-built engine on the New York Central, merely showed one of the fifty or so Baldwin locomotives constructed for the Central. Class K-11c, consisting of 30 engines numbered 3050-3079, was turned out in 1912. The numbers are now 4450-4479, and several have been changed to oil burners; not all are in service. Nos. 3398-3417, Class K-3c, were built in 1912, are now numbered 4821-4830; all ten are said to be in service. Moreover, the Pittsburgh & Lake Erie and the Big Four have Baldwin engines on their rosters. But No. 589 is the only Baldwin engine on the Boston & Albany.

Freight and Passenger Rates 103 Years Ago

"NOTHING will be received or delivered after sunset," according to a copy of regulations of the Portsmouth & Roanoke Railroad in effect in 1836, just discovered in files of the Seaboard Air Line, successor to the P&R. The ancient regulations provide further that: "Lime, tar, molasses, glass, stone or crockeryware, demijohns and jugs, furniture or carriages not boxed or harness not tied will only be carried at the risk of the owner." Rates on merchandise were four mills on 100 pounds per mile, lumber seven cents per ton per mile; passengers from depot to depot five cents per mile, but no passenger would be carried any distance for less than fifty cents; and no package received for less than twenty-five cents, freight.

Railfan Excursions

Photo by T. A. Gay, 62½ 78 St., Brooklyn, N. Y.

More Than 300 New York City Fans Made the Final Run over the Wilkes-Barre & Eastern on December 4. The Photo Was Taken at Stroudsburg, Pa.

Out of San Francisco

THE eight-day excursion to be sponsored by the California-Nevada Railroad Historical Society has been set tentatively for Saturday, June 17, 1939, leaving San Francisco and Oakland via SP special at 7 p.m., and traversing, the next day, the original CP route at Salt Lake. Arrive Monday morning at Salida, whence a special trip will be made on the narrow-gage *Shavano* to Gunnison, with return to Salida and the Royal Gorge in the afternoon. Tuesday morning in Colorado Springs, with ride on the Midland Terminal and Manitou & Pikes Peak; to Denver late Tuesday night. All day Wednesday in and around Denver, leaving Thursday morning over the Moffat Tunnel route, with stopover at Grand Junction. On the way home, visits will be made to the Uintah, remains of the E-N, the Nevada Northern, Deep Creek, etc. Arrive home Sunday night.

Past Excursions

The Railroad Boosters of Los Angeles conducted a highly successful "Kite Route" excursion over the Santa Fe last November 27, with 270 paying passengers aboard: from Los Angeles to Fullerton, Corona, Colton, San Berdoo, Redlands, Perris, Upland, Pasadena, and home.

The Fan Organizations

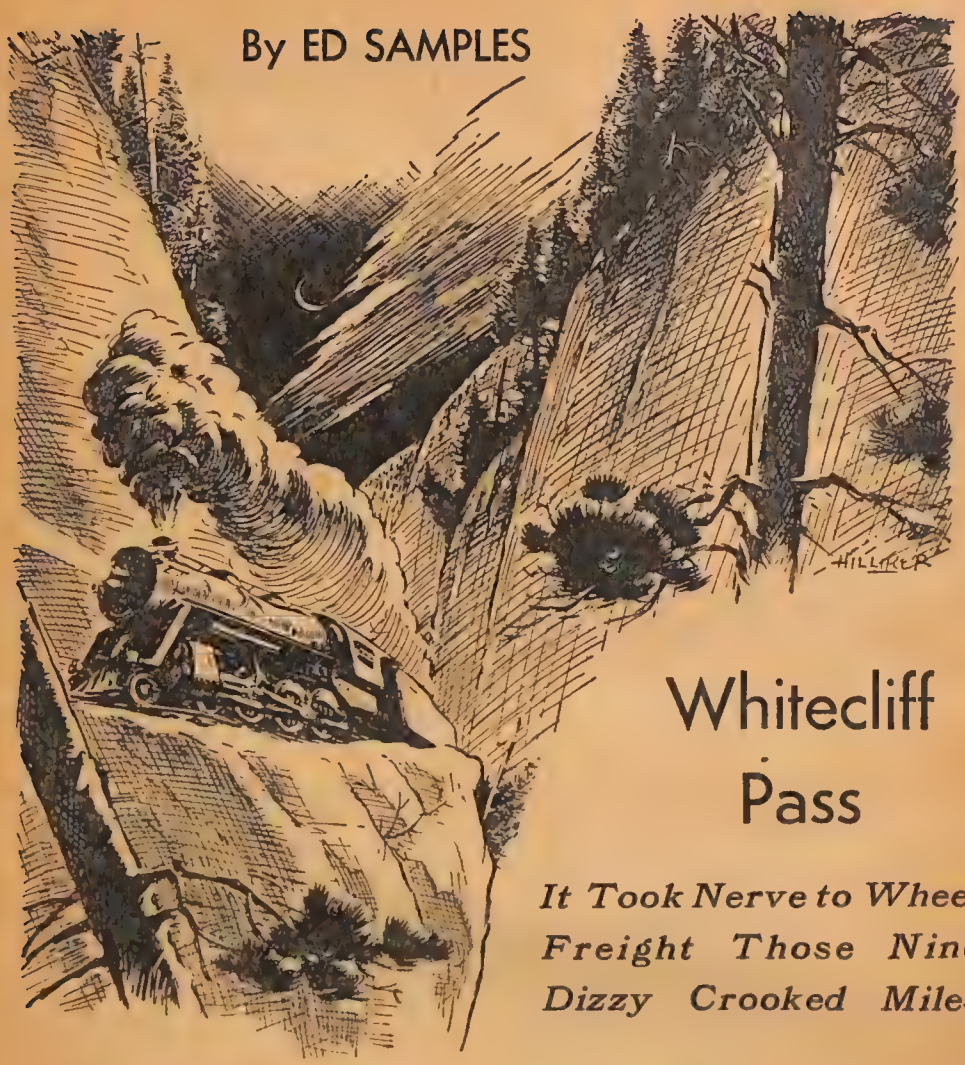
The Michigan Railroad Club of Detroit, Mich., meets on alternate Wednesdays in the reading room of the Michigan Central station at 8 p.m. The club is for photo fans, model makers, historians—anyone interested in railroads. A fan trip is planned for May; details in later issues. For information get in touch with Wm. J. Miller, 2239 Cortland Ave., Detroit, Mich.

A Toledo Railfan Club has been organized recently. Meetings are on the second and fourth Thursdays of each month at 3413 Ursula Blvd., Toledo, O.

The first anniversary of the Tacoma Chapter of the Northwest Railroad Historical Society was celebrated in the evening of December 8, at Tacoma, with a banquet for 41 members in the dining car of the Milwaukee's *Olympian*. President J. L. Roberts, founder of the Tacoma Chapter, was re-elected to the office for 1939. The chapter has been very active, sponsoring two fan excursions and acquiring an old-time sleeping car (page 80, Nov. 1938 Railroad Magazine) and six lots in South Tacoma as the start of a railway museum.

Central Electric Railfans' Assn. will run a trip over Chicago "El" during Feb. Write G. Krambles, 1240 Edison Bldg., for details.

By ED SAMPLES

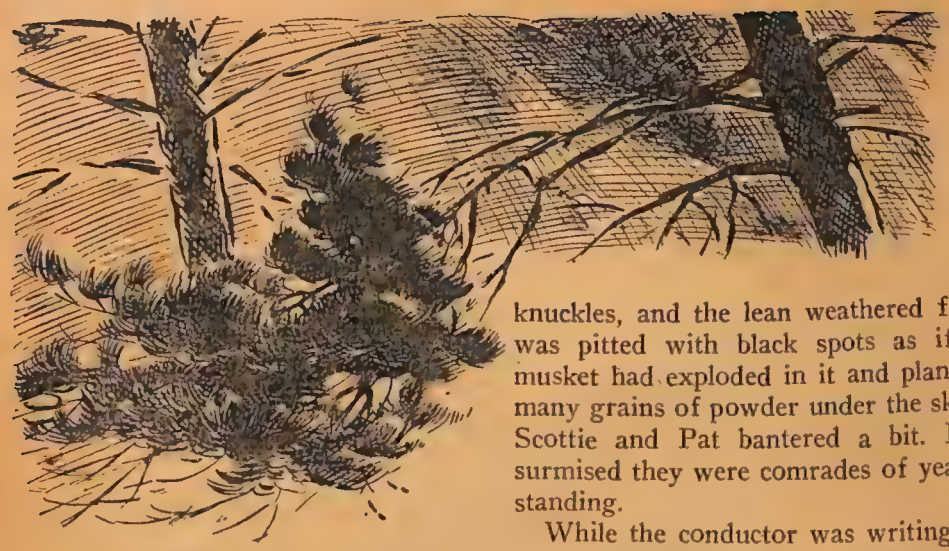


Whitecliff Pass

It Took Nerve to Wheel Freight Those Nine Dizzy Crooked Miles

EVEN though bluff Scottie McQuade did entertain secret fears about Whitecliff Pass, you could hardly blame him. It did take a display of nerve to wheel freight nine crooked miles mostly along a precipitous route where you could spit out your cab window down, down, down onto the rough malpai boulders a dizzy four hundred feet below. Everybody knew that more than one good runner had passed up his rights to the Whitecliff job, signing, instead, for a humble switch engine in the Tucson yards or taking a turn on the long blistering stretch of Valley Division.

Whatever touch of fear the blond giant may have had in his make-up, he did not show it that afternoon. Especially not to young Bill Donovan. He strolled into the crew room at Tuscany where the kid was changing clothes to fire the westbound stock train for him—Bill's first trip through the pass—and asked gaily: "Got your



rabbit's foot on you, tallowpot?"

Bill grinned up at the tall, homely, curly-haired figure before him. "I ain't sure, hogger," he said. "Mebbe I left it home in my other pants."

"Well, you'd better run home and get it; for when a fellow starts down the Whitecliff Gorge on a hog with me, he needs a rabbit's foot in each pocket and a horseshoe around his neck."

At this the youth smiled more broadly, showing a perfect set of incisors, but before he could fling back an answer Scottie had turned away to swap friendly cuffs with a boomer brakeman.

Completely dressed now, Bill went to work. He filled a two-gallon jug with icewater and lugged it gingerly over to the seatbox in the mountain decapod. The decapod was coupled onto forty cars of range cattle going west from the ranches of New Mexico and Texas.

Their conductor was Pat Murphy. Pat was a shrewd, wiry, little skipper in his late fifties. The thumb and first finger of his left hand were off at the knuckles, and the lean weathered face was pitted with black spots as if a musket had exploded in it and planted many grains of powder under the skin. Scottie and Pat bantered a bit. Bill surmised they were comrades of years' standing.

While the conductor was writing in his trainbook the engineer was reading his orders; and when the latter had finished, he addressed Pat with mock seriousness:

"If Donovan and me get some help in lifting these bulls up the hill, and if you and that lazy parlor man of yours will unscrew the caboose brake before we pull out, we can let Number Five pass us this side of the tunnel, meet the oranges at Phantom Valley, and go down to Whitecliff for Six."

Now railroad men will tell you there's a hard drag from Tuscany up to Phantom Tunnel, and so there is. It's almost as tough as the treacherous drop down the other side, close onto forty miles averaging just under two per cent, with not a break the entire distance. Only an experienced engineer can figure what he'll do with a new train and an untried fireman; but Scottie McQuade guessed right. He made every meet.

At 4.25 they had let the westbound limited by them and were heading into the passing track at Phantom Valley to meet two orange extras out of California. Bill was plenty busy. He took coal and water, shook down the grates,

dumped the ashpan, extinguished the fire in the cinders, and at length sat down in the shade of the water tank to rest. He felt the need of a breathing spell after four hours in the deck with the July sun beating down on the cab roof and the steel under his feet hot enough to fry eggs and sizzle bacon.

The first orange train came and went —thirty-five yellow reefers with ice-water streaming from their drain-pipes. Pat Murphy sauntered down from the office. When he handed Scottie the clearance and ten minutes on Number 6, he said:

"That second orange drag fell down on the lower hill. They'll be here a few minutes late. If they pull in on time, we'll go down to Whitecliff for the varnish," referring to the passenger train, Number 6.

"They'd better pull in on time," Scottie grunted. "I've got a date with the new bean'ry queen at Deserton, and unless we go to Whitecliff for that meet I can't make it."

"To blazes with you and your dates!" said the conductor. "You ain't takin' me down this hill an another ride like you did day before yesterday on that coal drag."

Scottie's devilish eyes twinkled. He chuckled softly, stuffed the orders onto his overall pocket, and swaggered away to tinker about his drivers.

The conductor sat in the shade with Bill, fanning himself with a battered felt hat and talking. Pat was a well-informed old codger. He had been in the Southwest forty years and knew every bit of history and legend connected with the region, and got a kick out of airing his knowledge. Directing the fireman's attention to the scene below, he pointed out the narrow valley backed by burnt ridges in the west, the crumbling ruins of an old Indian civilization, the cluster of white huts where the poverty-stricken remnant of the tribe lived on by their shriveled stream, and the railroad tracks swinging south in a nine-mile loop to enter the Whitecliff Gorge directly below the village.

"The redskins say there's a curse on the gorge," he concluded. "And there's railroad men on the C&B with no better sense than to believe it."

"I understand you have had quite a few accidents on this line," said Bill, thinking of Scottie McQuade's crack about the rabbit's foot.

"Yes, sir!" The old-timer nodded emphatically. "You can't run trains down a mountain on right-angle turns without gettin' into trouble. The railroad's built on a natural quartz ledge runnin' along the side of the cliff. The board of directors was afraid they'd spend too much money on it, so they left a lot of sharp curves where they should either have bridged or tunneled. There's twenty places in that crooked slosh where you can't see five cars from your cupola window; and right where you go into it you can't see but three. Every time a hoghead lets a train get the bulge on him, he piles up on the rocks. There's been two head-on collisions and Lord knows how many derailments down there the last fifteen years."

"McQuade been in any of 'em?"

"Not yet, but he's goin' to be if he don't quit actin' the damned fool. His father was killed in a powder explosion over there on the curve when the road was buildin'. Two of his brothers went into the gorge in the head-on collision five years ago, and McQuade's got the crazy notion that the only way to defy Fate is to see how fast you can run and still stay on the track. I know what's goin' to happen if he don't quit

it. Everybody knows. That's why I was bawlin' him out here a while ago."

BUT in spite of the lecture, Scottie gave Pat another skyrocket ride that very afternoon.

In order to keep trains out of the boneyard below Phantom Curve, officials had set rigid speed restrictions on the hill. They had bulletined instructions to the effect that crews must use forty-five minutes on the nine miles from Phantom Valley to Whitecliff, and forty-two from Whitecliff to Malpai. Pat was familiar with these instructions. Nevertheless, when the second orange train cleared the passing track switch, the stock drag had fifty-two minutes to make Whitecliff for Number 6. That was time enough, but none to spare.

Scottie whistled off. Pat gave a highball, not quite sure of what he was in for. He rode the engine out. He did not admit that his purpose was to make sure the engineer handled the train as it should be handled, but Bill Donovan surmised as much.

Scottie started down the grade boldly, playing the air with an artist's touch. The two brakemen were spaced at intervals along the car tops, turning up retainers. When the engineer went charging his trainline after the first brake reduction, he blew a hole in the airhose fifteen cars behind the engine. That threw the brakes into emergency and stopped him.

Of course, the crew did not know what had happened. It might have been an airhose broken, or a drawbar out, or a car on the ground, or a knuckle slipping by. Scottie called out his flag; and Pat headed for the rear, because on such a hill his parlor man went back, and went plenty far.

The head man trotted along the train, hunting the trouble. He quickly discovered it, returned to the engine, unscrewed the airhose off the pilot, and hurried away to exchange it for the one which had blown.

All of this required time. When the hose was replaced, the air pumped up, and the parlor brakeman called in from his flagging station up the hill, they had lost many minutes. That threw them on short time against Number 6. According to rules, they should have proceeded down the hill at the rule-book rate and when they could go no farther, stopped their train, sent a flagman walking ahead to hold Number 6, and followed him to Whitecliff.

If Pat had been on the engine, he would probably have done exactly that, but not Scottie. The way Scottie figured it, he had twenty-three minutes to run eight miles and get into the clear without stopping the passenger train. He could make it at an average of a little less than thirty miles an hour.

The big fellow kicked off his brakes and started moving. He didn't fool about it, either. He let them roll right up to a forty-mile clip and kept them there until he was within less than a mile of the curve. Whether he missed his guess on how quickly he could check them to twenty—which was considered the fastest speed safe for that spot—or whether he did it out of sheer bravado, Bill was not quite sure.

One fact was undispuſed: When the pilot wheels bit the curve, they were rolling close to thirty, even with all the brakes set. Bill, looking from the cab window, saw a yawning chasm dead ahead; a yawning chasm about thirty feet wide with a ledge of white rock on either side the rails disappearing around the cut wall on the left, and no bottom in sight!

He thought sure they were going too fast to make the curve. So he headed for the gangway on his side, the side next to the cliff. Out of a corner of his eye he saw Scottie standing on his platform playing with the sand valve and the brake. Bill went nervously down the step, but he didn't jump. The inside wheels of the big engine lifted full three inches off the rail, made two or three revolutions in air, and settled back where they belonged.

The whole train took the curve. When the young fireman, pale and trembling, finally scrambled back up into the cab, he found Scottie calmly standing on the deck with the icewater jug resting on one shoulder. He saw the huge engineer take a long swallow and then wipe his mouth leisurely on a blue bandana, and heard him drawl: "Where did you think you was going, tallowpot?"

"I knew right well," the kid snapped, his nerves still shaken, "I was *not* going over that damn cliff with you!"

A slow smile tinged with derision played over the hogger's weather-beaten face.

"I told you before we left Tuscany you'd better go home and get that rabbit's foot."

Bill was nettled at the other's air of unconcern. He retorted hotly: "To hell with a rabbit's foot, but if you or any other lunatic ever again tries to bring me around that curve like you did just now, I'm goin' to have plenty of use for a coal pick."

NOR was Bill the only one who felt that way about it. When they stopped at Whitecliff to open the switch, the boomer brakeman described the engineer and his ancestry in the raciest epithets he had collected in twenty years of rambling; and before they were in the clear, the irate Pat Murphy slid down with the coal bellowing: "What in the devil's the matter with you, McQuade?"

"With me?" innocently. "Why, Pat, I never felt better in my life."

That's when the peppery little conductor read the riot act. He talked like a father, like an outraged conductor and like a brass collar all in one. He reminded Scottie that four good locomotives were lying down in that ditch, put there by fools like him; and that a passenger train was coming up the hill with a hundred souls aboard trusting the railroad men to keep the track clear and safe; and he wound up with:

"If you ever try that grand-stand stunt on me again, so help me, I'm going to turn you in and let 'em can you!"

All that summer and fall Bill fired for Scottie and marveled at his technique. Although still in his early twenties, the big bluff engineer handled his train with the skill of an expert. Whether he was pulling a drag or handling fruit or livestock on a fast schedule, he maneuvered those freights up the grades with never a broken drawbar, and let them down the mountains as smoothly as if he were handling each car as a separate unit.

Bill soon discovered that McQuade was also a clown and somewhat of an acrobat. There was a brakeman named Norms on one of the crews who claimed to have been a human fly. Often when Norms was working the head end, Scottie would leave the fireman in charge of the engine, and the two of them would go out on top of the train and put on a show. They'd stand on their heads on the running boards, walk on their hands, and even turn handsprings across the couplings; and sometimes they'd stage a boxing

They'd Stand on Their Heads on the Running Boards, Walk on Their Hands, and Even Turn Handsprings Across the Couplings

bout right out there on the car tops where a slip of the foot would send them hurtling down to certain death. Bill didn't think so much about that —until several months later—because he had seen playful "rails" on other roads doing the same stunts.

But the thing that sent shivers creeping along his spine and caused him to wonder sometimes whether or not Scottie was quite all there, was the little game of follow-the-leader which he and Norms played when they'd head in for a long meet at Whitecliff siding.

That cliff—*la Pana Blanca del Muerte* (the White Cliff of Death), the natives called it—was a peculiar geologic formation. The ledge of rock appeared at first sight to have been plastered on the wall of the precipice four hundred feet up from the bottom. In reality it was a layer of quartz some fifty feet in thickness resting upon and overlaid by strata of less durable formation. Water pouring down from Phantom Valley had worn away the cap rock, sawed an irregular groove through the quartz, cut a deep gash in the bed, and left two white palisades facing each other across a chasm.

Bill Donovan would shudder when he thought what might happen if the overhanging ledge should give away with a passenger train running over it; but apparently there was no such danger. Little chunks, however, were eternally breaking out where water from the infrequent rains poured through the notched edges. Where they broke were small pits and projections.

Norms and Scottie, like two venturesome overgrown kids, considered it great sport to pull off shoes, socks and gloves, and climb up and down these gashes, clinging to the projections almost with their toenails. Norms was good, but he had nothing on Scottie; and the powerfully built engineer was as proud of the accomplishment as a six-year-old playing in a piano recital.

IN OTHER respects, Scottie heeded Conductor Murphy's warning. Only once did he exceed the speed limit down the hill or use less time than rules required. That was along about the middle of December.

There was another conductor on the job that night, known as "Hatchet-Face" Billings. Now Billings was a hard-fisted *hombre* who recently came up from Old Mexico. He and Scottie had fallen out over beanery queens and stud poker and didn't have much love for each other. When the high-wheeling engineer suddenly settled down to running trains the way officials said they wanted it done, Hatchet-Face jumped to the conclusion that Scottie had lost his nerve, and made some nasty remarks about it in the crew rooms and out on the roads. Bill heard, but he was not sure that Scottie did.

That fall the C&B had bought ten huge new engines of the 4-8-4 type, the very latest thing in freight power. These were equipped with air pumps and storage reservoirs of large capacity built especially to handle the trains down the mountain grades. That cold starlit night in December, Scottie caught one of them out of Tuscany, pulling Conductor Billings on thirty-two cars of company coal.

They came down the mail line at Phantom Valley two hours after dark, intending to go to Whitecliff for their meet with Number 2, While they were working on the fire and taking coal and water, the dispatcher brought another extra freight up the hill to meet them. When it had cleared, they lacked two minutes having time to go to Whitecliff. Scottie whistled a back-up signal, signifying that he wanted to reverse and head in.

Billings was in the telegraph office. He came out on the platform, swung a stop sign, and hurried to the engine with the clearance. Scottie glanced at it, looked at his watch, and asked:

"Didn't you get anything on Number Two?"

"Nope," Hatchet-Face said smartly

"Then it looks like we're stuck here for 'em."

"What's the matter?" the conductor challenged. "Been eatin' rabbit lately?"

Scottie's words were hard and pointed. "Just what do you mean by that crack, Billings?"

"You know what I mean, McQuade. You used to take conductors down this hill in twenty-five minutes. Now you're afraid to go on forty-five.

"Do you want to go?"

There was a glint in the engineer's eye that would have warned any other man. But it didn't warn Hatchet-Face. He said: "I sure do, if you've got the nerve to take me."

"Okay," Scottie drawled. "We're going down the hill."

It did not occur to Bill then that the engineer even considered going all the way down the hill. If it had, he would have gotten off the engine and refused to leave Phantom Valley. It was sixteen miles to Malpai at the mouth of the gorge, sixteen miles on which freight trains were required to use eighty-seven minutes. Number 2 was due out of there in twenty-nine.

Scottie dragged the whistle cord for a wailing highball. The parlor brakeman's light on the waycar roof said "Go!" Billings and the head man repeated the signal with a fancy flourish. Scottie stretched the drawbars on those thirty-two cars of coal and kept them stretched until he was running nearly fifty miles an hour on track carded twelve.

He did not hit Phantom Curve on one side as he had done that evening in the summer. He set his brakes a long way back and came around it at twenty; but when he whistled for Whitecliff siding, he had used fourteen minutes on nine miles and had fifteen left for the seven miles to Malpai. He blew for the station and signalled through.

Billings made no attempt to stop him. You couldn't pass a signal ten car-lengths anywhere between Phantom Curve and Malpai; and after what he had said to Scottie about eating rabbit, it wouldn't have looked quite right for him to pull the air. He let him go.

THAT was one trip Bill Donovan rode the engine steps instead of the seatbox. But he didn't jump. Later he learned that no other train in ten years had descended Whitecliff Hill the way they dropped down that night, like a plummet into a well. When they stopped at Malpai, at the bottom of the hill, a cursory inspection revealed that sixteen brakeshoes had been burnt up and cracked to bits; and before they left, they were given a message for the whole crew to report at the office next morning.

The superintendent held a lengthy session of kangaroo court, but the crew were ready for him. Bill had heard the conductor talking to Scottie in Phantom Valley. Hatchet-Face himself had highballed with less than running time and clearance, and he had a conductor's valve on the caboose with air in it. He was too wise to turn the engineer in for reckless running and try to save his own face, for he knew Bill and Scottie could block him.

On the way from Malpai he approached the engineer, offering peace terms and a way out for all of them, and before they arrived in Deserton the crew had their alibi all fixed up. Scottie declared he had lost his air coming down into Whitecliff, had been unable to stop the train there, and had not gotten it under control until he was almost down to the Malpai switch. The brakemen represented themselves as heroes out on top of those coal cars fighting the grade with hickory clubs to stop a runaway.

The superintendent knew they were lying, but the whole crew stood pat on their story and he had no earthly way to disprove it. So he scorched and flayed the crew, assessed each of them thirty brownies for leaving Phantom Valley on short time against Number 2, and did nothing about their going down to Malpai on imagination.

The motive-power department was not satisfied with his investigation. It didn't look good to have one of their iron gods failing to furnish air for a thirty-two car train on Whitecliff mountain.

The master mechanic declared: "There's either something wrong with the equipment on that Number 1608, or else there's something wrong with the engineer. That braking system ought to handle sixty loads as slick as a top, if the hoghead knows his business."

He took the locomotive into the shop for a brake inspection. He had

the air traced through the equipment from atmosphere to atmosphere, watched the pressure in the reservoirs, and found nothing wrong with it. He had Scottie McQuade called for the engine again, put the traveling engineer on with him, and told him:

"You ride with that young grandstander until you teach him how to handle the brakes on a freight train."

Douglas, the traveling engineer, made three round trips with Scottie on the 1608. He explained how to handle the air, stood at Scottie's shoulder when he was going down the hill, and told him what reductions to make and when to recharge his train line. Scottie stuck his tongue in his cheek and never once intimated that he knew more about braking trains down the hill than the man who was advising him.

WHILE Douglas was riding herd on Scottie, he was also checking other things. The Christmas rush had left freight yards badly congested. In Tuscany were two hundred cars of copper ore from the mines around Bisbee and Miami. The dispatchers were moving it out the day he made his fourth trip on the 1608. They had sent thirty-eight loads up to Phantom Valley on a drag with two helper engines, had the crew set it out for somebody else to take west, and turned them back into Tuscany.

They gave Scottie fourteen loads and no helper, because Douglas wanted to test out the new engine and see how she handled her tonnage up the grade. There had been a light snow that afternoon, but the clouds had cleared and the thin rind of a new moon hung low in the west. Scottie called attention to it, made a big ado of searching his trouser pockets, fished out the old rabbit's foot, and said banteringly:

"Yep, I've got it on me."

Bill understood to what he referred. The Indians over in Phantom Valley firmly believed, as Pat Murphy had said, that there was a curse on Whitecliff Gorge and it was bad luck to go in there when the moon was new. You couldn't get one of them through there on a bet, and the railroaders were always kidding about it.

Mr. Douglas boarded the engine with his check sheets, and watched Scottie maneuver the train out of the yards. The new engine handled it like passenger. He said approvingly:

"I believe it is possible to make it from here to Phantom Valley and never drop under fifteen miles an hour. Let's try it."

He had Scottie try out different cutoffs, and noted on the check sheet how the engine reacted to the change. He criticized Bill's firing, noted at what interval the kid put in coal, and how much, and where he placed it; and offered comments on ways of conserving fuel.

That afternoon around Tuscany the snow had melted as fast as it had fallen. But as they climbed toward the tunnel, fleecy clouds came over the ridge. Gusts of wind whipped new snow through the glare of their headlight, and eleven miles from the crest, they ran into cuts where it had piled an inch or more in depth over the rails.

"I don't like this," Douglas murmured uneasily. "If I'd had the remotest idea we'd hit snow up here, I'd have had them give us a helper."

Scottie enjoyed the situation. He said: "Maybe it's a good thing to make *one* test run under the weather conditions us hogheads have to fight all winter."

"You want to watch that sand, McQuade," the traveling engineer warned,

"for if this high-wheeled hog starts slipping, we'll double out of here sure as fate."

The grizzled teacher of engineers had come to his position after long years at a throttle. He stood at the blond giant's elbow. His trained ear listened to the chutter of the exhaust, to the clank of rods and the beat of drivers.

Scottie kept the pneumatic sander spraying a fine film from four pipes on the slippery rail. For three miles they hammered the grade, just about fifteen miles an hour, with not a slip. Then without the slightest warning the wheels lost traction, the exhaust broke into a roar, the drivers spun, and the engine shivered. Scottie shoved up his throttle. The traveling engineer shouted:

"Your sander! And hurry! Get that hand sander working!"

The big hogger opened the hand sander. It required time, because the engine was new and the mechanism was stiff and hard to open. The drivers caught once more. He dropped his reverse two notches, and eased the throttle back to its position, but he had lost five miles an hour in fifty feet.

Scottie thought he knew what had caused the trouble. He was sure sand had clogged in the pipes leading down from the box. It often did. He turned to the traveling engineer.

"If you'll take her a minute, Mr. Douglas, I'll go out and jerk them loose."

The veteran slipped into the seat. Scottie grabbed a hammer, went out through the cab window onto the running board, and tapped the pipes. The stoppage broke. Sand flowed freely. Douglas turned off the hand equipment and let the air do its work.

THEY were pulling old Pat Murphy that night. When they stopped in Phantom Valley, there was a message for them to fill, to pick up the thirty-eight cars of ore the drag had brought up and add it to their own train. The peppery little conductor came over to the engine howling. Pat always howled when he had to fill. Most conductors did.

"It looks to me like a mighty poor time to put three thousand tons on a train and try to go down this hill with it," he told Douglas tartly. "With this snow on the rails—"

But the traveling engineer had been fully aware the message would be there. He himself had arranged it, to test out the engine and the engineer. And so he answered:

"The braking system on these engines will handle three thousand tons down this hill under any conditions, Mr. Murphy. We had them specially equipped for that purpose."

But there was one condition with which the traveling engineer did not reckon. When he had shut the hand sander down on the hill, he had failed to close it entirely, because the locomotive was new and her mechanism worked hard. All the way up the hill, sand had dribbled from the box and wasted on the rail. It had kept right on wasting while the crew had switched out their thirty-eight cars and coupled them into the train.

When Bill Donovan went down to dump his ashpan he saw little heaps of sand under the pipes, but it did not occur to him then that the wasting had been sufficient to drain the box. He went up into the cab, closed the valve, and did not mention it when the two engineers came in from checking the feedwater heater. They read their orders and started down the hill, un-

aware that their sand was almost gone.

A few times under favorable conditions, Scottie McQuade had taken three-thousand-ton trains down the hill with the old engines, but never on a snowy rail. Neither had the traveling engineer tried out the new equipment with such a train and such a rail. He told Scottie when and with what reduction to apply the brakes, and watched results.

He kept watching for six miles. Although their train was heavy and would ordinarily have been hard to handle, the new engine furnished it with plenty of air; and Scottie let it down the hill with scarcely a change in speed, though in some places the snow was three inches over the rail. It was working so perfectly when they were three miles above Phantom Curve that Douglas called up from the gangway:

"Let them roll a little this time, McQuade. I want to see how they handle at twenty."

When they were running just under twenty miles an hour, he sang out: "Give her fifteen!"

"Okay, Mr. Douglas," Scottie shouted back. "Fifteen she is!"

He opened the port. Air hissed out. The train line gage dropped from 90 to 75. Scottie closed the valve.

The train should have responded immediately to the reduction. It had been responding all the way down the hill. This time, however, nothing much happened. The speed fell off a trifle, but not as it should.

Douglas had been standing in the gangway counting telegraph poles. He came quickly to Scottie's side, peered at the gage, and inquired:

"Did you give her that fifteen?"

"I sure did," said the engineer. "There it is on the gage."

Neither of them said anything for a few seconds. Scottie watched back along the train and glanced at the air gage. He suddenly became aware that his drivers were skidding, not turning. He looked around at the traveling engineer and muttered:

"That sander's stopped again."

"Try the hand one," said Douglas. He was far less excited than he had been when he had thought they were going to stick on the other side of the hill.

The engineer worked the sander. The wheels kept right on skidding. It did not occur to either of them what had happened. In fact, Scottie said: "Somebody must have poured water into the sandbox."

This time Mr. Douglas went out with the hammer. He pounded the pipes, and when they did not open, climbed atop the boiler, lifted the sand box lid and peered into it. When he returned to the cab, his face was blank and his voice was not steady.

"We've lost all our sand, McQuade."

"I figured that out two minutes ago," Scottie drawled with no show of emotion.

THE men held a hurried consultation. If Scottie was afraid of Whitecliff then, he certainly concealed his fear. He reckoned they might get their train under control where the grade leveled off running through Whitecliff siding.

"It's less than half what it is here," he said, "and we're almost holding our own now."

"You'll never get to Whitecliff siding," Douglas croaked, "because you can't make Phantom Curve."

"I've made it a lot faster than we're going now," Scottie chuckled.

"But not with a sixteen hundred class engine. They don't take these curves like those old eleven hundreds did. If you don't turn over, your weight will spread the rails and ditch you."

The head brakeman, aware that something had gone wrong, came sliding into the cab. Douglas removed his grip from the seatbox and stuffed his reports into it. Scottie made no preparation to leave. He remained on the platform, released his brakes, and made another set.

All along the train, brake rods were whipping snow into a fine mist and powdering the rails with it. Slowly, almost imperceptibly, their speed increased. They were running twenty-five when they approached the curve. The traveling engineer called Bill and the brakeman to the left side of the gangway and told them:

"You boys might as well unload."

"Are you and Scottie going to unload?" Bill asked quietly.

"Not now," Scottie replied for him. "We'll see how we take the curve."

It was dark out there, and the snow looked cold, but Douglas was steering them toward the steps.

"You go ahead," he ordered emphatically. "You clear out of our way, so when she starts to turn over on the curve we'll have a chance. If we get them under control, we'll stop for you in Whitecliff. If we don't . . ."

The brakeman loped off and the fireman followed. Bill dug his nose into the gravel, and came up spitting snow and blood. He forgot a second later that he had lost a tooth and some skin, for he felt a terrific jar, as if an earthquake had struck the canyon. The boom of the crash echoed through the valley, followed by other echoes as the ore cars rolled by and plunged four hundred feet into Whitecliff gorge.

When the brakeman had found his lamp and relighted it, they started toward the head end. Bill dreaded to go, because the cars were topsy-turvy and the cut was full of ore. They met Douglas scrambling out from behind it calling for a light.

Pat Murphy came running behind them, shouting: "Where's McQuade?"

"He *was* in the engine," Douglas answered vaguely.

"Did she go down?"

"Of course she went down."

BUT the 1608 had not gone down. Right on Phantom Curve, the sash was so narrow a man could almost jump from the south cliff to the north one. The engine had left the track. The front end had taken the air; but, balanced by the heavy rear, had shot angling across the gorge and landed on the north ledge, forming a bridge across the chasm instead of falling.

Fifty-four cars of copper ore had wallowed the engine around, rolling her onto the left side and almost demolishing the strongly-built steel cab. They had driven the large steel tender like a blunt wedge between the boiler end and the cliff wall, and had laid the side of a big Pennsylvania coal car squared over the crushed and crumpled right cab window.

The men heard Scottie sputtering and swearing when they were yet far off. His voice came from billowing clouds of white rolling up from broken steam pipes. Pat shouted:

"Are you hurt, Scottie?"

"No, I ain't," the engineer bellowed, coughing and almost strangling from sulphurous fumes. "But somebody else is going to be if you guys don't bring a light down here so I can see to get out of this damn trap."

Bill felt a mighty weight lifted from him. He grabbed the brakeman's lantern and headed through the steam clouds hunting Scottie. Pat was at his heels, with Douglas and the head brakeman following.

They found the huge fellow scrambling blindly around in the cab roof trying to escape. He could not escape, because the wreckage was jammed around it so that the largest opening into it was the eight-by-ten-inch vent through the roof. Pat handed in a flashlight through that. Scottie played it over the interior, crawled all around and came back to the opening.

"Looks like I'm stuck here for a meet with the big hook," he growled.

"It sure does," the conductor agreed. "Are you positive you're not hurt?"

"Not a scratch except a pump knot on the bean and a few inches of hide knocked off my shin."

"The only thing I see, McQuade, is to make yourself as comfortable as possible till the wrecker gets here with a blow torch to cut you out. I'll walk down to Whitecliff and wire in."

The conductor and the head brakeman struck out for Whitecliff to report. Bill and the traveling engineer and Norms, who was braking swing for Pat then, remained with Scottie. The captive did not appear to be in the least alarmed. There was no apparent reason why he should be. The 1608 was lying on solid rock. There were ore cars ricked up behind and on top of her, but apparently she could not get loose until the big hook came.

Scottie kept up a rambling chatter, talking about his rabbit's foot, and the money in the cage, and the prisoner behind the bars. About the time Pat was wiring his report to the dispatcher and asking for two hill engines to come down from Phantom Valley and drag his rear end, Scottie wanted to know: "Have you fellows got anything to eat back there in the crummy?"

"That we have," Norms replied breezily. "Shall I fetch you a sandwich and some coffee?"

"I wish you would, old man."

NORMS was gone nearly an hour. Shortly after he left the caboose, two engines coupled into it. The parlor man connected the air, came down to close the anglecock on the head end of the forty cars which had not been derailed and cut them off from the forty-first, which had gone tie-walking.

Norms handed Scottie two ham sandwiches, a coffee pot, a cup, and a lighted lantern through the vent. The prisoner cleared a place against the boilerhead and squatted down to pour his coffee.

Norms had warned the parlor man to be careful coupling into the train, because several derailed cars were hanging onto the cliff by their eyebrows. The parlor man had passed the word to the engineers; but while Scottie was pouring the beverage the two hoggers, trying to start too much tonnage on a snowy iron, took the slack into the forty cars. Cars on the track rammed cars in the ditch. One turned loose and went crashing down.

That started other movement. Loose ore slithered off into the forge. The engine cab quivered. Scottie jumped up with the coffee pot in one hand and the cup in the other, looking as if he had heard a sudden call.

Across the chasm, a two-foot slab of quartz broke off the north ledge right under the nose of the 1608. A sickening shudder ran through it, and it started toppling like a big tree cut off at the stump.

The traveling engineer leaped back, shouting: "Look out, boys! She's going!"

Scottie thought she was going too. He let fall cup and pot, and came clawing at the vent with his mighty strength like a caged tiger trying to get out. The head end of the engine went down four feet and stopped. The men held their breath. Bill played the flashlight cautiously over it. He did not tell Scottie what he saw, because the smokebox had slipped half its width down the face of the cliff, and the front end of the engine was hanging only by one ring of metal.

To Norms he muttered: "Beat it up there quick and don't let those dumb heads hit those cars again."

Scottie did not eat much lunch. His coffee was upset and he had lost his appetite for sandwiches. For four long endless hours he remained in the cab, because it takes time to collect a wrecking crew and run fifty miles with the jangling hook. He kept moving incessantly, looking at his watch and wondering:

"What's the matter with them damned mudheels? Why don't they come?"

At length, about daylight, the wrecker arrived from Deserton. A welder brought a blow torch up and cut a hole in the roof for the engineer to crawl out through. He didn't fool about it, didn't even wait for the edges to cool off. He crawled out, stretched his long legs, looked around at the white world, and drawled:

"Brothers, that's one time old Scottie's glad to get out of an engine cab."

THE engineering department had been trying ten years to wheedle enough money out of the company's treasury to cut a few short tunnels in the gorge and eliminate some curves. They had been put off; but when the wrecker foreman made a mistake and let the 1608 fall four hundred feet with a wrecking crane hooked to her, and when the claims department settled for nine carloads of high-grade copper ore and the cars it was in, the purse-holders decided they would save money by changing some railroad. They appropriated funds. In the middle of February, a construction gang parked at Whitecliff siding and went blasting a tunnel through the ridge back of Phantom Curve.

The wreck did something to Scottie McQuade also. Bill sensed it the first time he got on an engine with the big fellow. Before the wreck, conductors were always pulling the air on him or flagging him down to keep him from going on short time against passenger trains; after it, he wouldn't go on short time against a hand-car. Before the wreck, he'd run the wheels off an engine and keep the trainmen busy packing journals he'd scorched with fast running; after it, nobody could bet or bully him into running over thirty-five miles an hour.

Bill Donovan knew right off that the man had lost his nerve, and it wasn't long until others discovered it. But they all liked Scottie, felt sorry for him, and figured he'd soon come out of it. He kept getting worse. Dispatchers rode him, and officials had him on the carpet because he couldn't make him. Conductors howled because when they caught a run with him they were fourteen hours getting over the road.

One afternoon in May, Bill and Pat Murphy were playing dominoes with Conductor Billings in the "Y" at Deserton. Scottie and Billings had quit

quarreling over beanery queens and poker and had become friends. Talk turned on the downfall of Scottie, and Pat said that something had to be done about the engineer or he was going to get fired.

"What can be done?" asked Bill, who had become so disgusted that he was about ready to throw up the run and go on the extra board. "Scottie won't listen to his friends. You can't turn him across your knee and paddle sense into him like you would a six-year-old, even if he does act like one."

"Have you got any ideas, Billings?" Pat asked. "I've already exhausted all mine."

Hatchet-Face grinned thoughtfully. "I believe I have, fellows," he replied. "I've been studying Scottie these last few weeks. What he needs is a hard jolt to wake him up."

"What kind of jolt?" Pat thought too much of his friend to see him manhandled.

Billings thumbed through the dominoes, stacked them into their box and shoved the box into the center of the table.

"Here's what I mean. We've all been pitying Scottie because he's had a lot of hard luck—you know, his father, and his two brothers, and then his own pile-up. A guy deserves sympathy after a run like that; but we've been feeling sorry for Scottie so long that he's gone feeling sorry for himself; and unless he snaps out of it that guy is going to smash his whole life."

"You may be right," Pat Murphy admitted.

"I know I'm right," said Billings. "What Scottie needs isn't coddling, but a genuine good razzing, and I think I've got a scheme that'll pull him out of it."

THE fireman and the conductor followed the hatchet-faced Billings up to his room and he outlined the scheme to them. It seems there was an ancient Indian over in Phantom Valley who laid claim to the gift of prophecy. He had predicted, so it was said, the disaster in the gorge when Scottie's father had been blown up in the explosion. The railroaders derisively called him the Seer of Phantom Valley. He must have been close to a hundred, but he was still a wily old rascal and loved his liquor.

Some prophets maintain their reputation for wisdom by keeping their mouths shut. The seer was pretty much that way when he was sober, but after he'd had a few drinks of firewater he'd talk the arm off a brass monkey. Ever since Bill had been on the job, the redskin had been going back and forth from the village to Tuscany or Deserton, peddling pottery and beadwork. Some of the conductors let him ride in their waycars, and threw in a few shots of good liquor just to hear him rave and predict damnation to the railroad, which he claimed was disturbing the rest of his forefathers.

Scottie had poked as much fun at him as anybody, but since the wreck the blond giant had seemed to be taking him seriously. Scottie was even hauling the seer up and down the line in his cab and feeding him at the restaurants; and he frequently quoted the redskin with regard to the evil fate which had overtaken railroad men caught in Whitecliff during the time of the new moon. Not that Scottie was becoming superstitious. Nothing like that. Nevertheless, you can't be too sure, and why take chances?

Billings, after reviewing these facts, told his confederates: "Now, here's what we'll do. A couple of days before

it's time for Scottie to lay off, we'll take that old bag of bones over to Tuscany. We'll bring him and Scottie together. We'll slip him a lot of hokum to hand Scottie to the effect that Death is waiting for him over in the pass that night, and—"

"But would he do it?" queried Pat.

"Who—the seer? Of course he will! I know that pest. Give him two drinks of whisky and three dollars, and he'd do anything. You leave it to me."

Pat and Bill agreed to give it a trial.

Hatchet-Face went on confidently: "Scottie's just screwy enough right now to fall for this line. He'll rush madly up to the roundhouse and try to lay off. You, Pat, fix it up with the caller to *make* him work. Bill keeps an eye on him to make sure he don't go clear off his base. When it's all over, and he's gone into Deserton safe and sound, we'll tell him how we framed him and give him the razz of his young life. If that don't wake him up and put him back pulling hot-shots within a week, I'll eat my hat."

Pat and Bill went into a huddle. They chipped in a dollar apiece, and told Hatchet-Face to bring the seer and get set for the play at least two days before the moon changed.

BILLINGS hauled the old-timer over to Tuscany in his own caboose. He stopped an orange train early one morning just before he had come up out of the gorge, walked a half mile to the village, and brought the Indian down to the railroad so he wouldn't miss the train.

Scottie and Bill, following him up the hill, stopped on his flag, and saw the two of them crawl through the right-of-way fence and get on the caboose. If Scottie had been using his head as he had done before the wreck, he would have tumbled right away to the fact that something was in the wind, but the big hogger had almost reached the point where he could not do his own thinking.

He pulled his train into Tuscany and slept while his three friends plotted his redemption. Bill went with Pat to the dispatcher's office. They had a session with the chief and the callboy. Either of them would have done anything for Scottie McQuade. Both men agreed to play the game. The chief even agreed to fix the crew up with a passenger run that night so Scottie couldn't lay off on call, and left an order to call McQuade with Pat Murphy on 2nd Number 3.

Billings lubricated the false prophet, promised him a free ride home and three dollars when the work was done. He coached the Indian on what to do, and he stayed up all day to make sure the meeting was timed to take place as the engineer came down from his room after he was called.

The others did not know the particulars; but whatever Billings had the seer tell Scottie, it must have been very impressive, for the big engineer walked into the trap like a six-months cottontail on the scent of a rotten apple. He hurried straight to the roundhouse and told the caller to mark him off and call another engineer for 2nd Number 3.

"What's the matter?" the caller asked. "Are yuh sick?"

"Yes, I'm sick." Scottie looked it too, with his blue eyes bugged out and his face flushed, and breathing as if he had a temperature.

"Got a doctor's certificate?"

"I don't need a doctor's certificate. You mark me off that run and call another hoghead, for I'm not going."

"The hell you ain't!" The callboy was talking hard and loud. "You can't lay off on me on a call for a passenger run. Why, we'd have to hold that train here a full hour waiting for somebody else."

Scottie thought the kid was lying. He rushed in and looked over the board. The caller had known he would do exactly that and had the board fixed accordingly. There wasn't an extra man in sight for more than an hour. Scottie finally accepted the call, and went out, pulling Pat Murphy on nine Pullman loads of passengers. He was as nervous as a chicken thief waiting for the verdict of his first jury.

Bill felt sincerely sorry. But he had neither time nor energy to waste in sympathy on the way up the hill. The helper engine had a student fireman and not much steam. Scottie fumbled a lot. Unused to the high-wheeled passenger engine, he used too much power and not enough sand. When the drivers slipped, he couldn't seem to get to his throttle, and he kept the fire torn up all the way into Phantom Valley.

It was 10.55 when they emerged from the tunnel and came out on the western slope—10.55 and a May sky full of stars, and a red order board grinning at them as they ran by to their station stop.

The trainmen made their brake test. Bill took coal and water and joined Scottie who had oiled around and returned to his cab. Formerly Scottie always had a tune to whistle or a funny story to tell when they'd be waiting in the cab, but that night the funny things were somewhere else, and the whistle didn't come. He sat in the window staring moodily over the yard lying all dark and ghostlike under the stars—the coal chutes, the water tank, the telegraph office, with two oblongs of light glowing against the background of the mountain, and a long freight heading west down the grade.

A BOOMER operator named Jennings had hired on in Tuscany that afternoon as relief dispatcher. He was working the west end that night. He reported for duty before eight o'clock. He knew neither McQuade nor the Whitecliff country; but when he went into the office, the chief and the east end man were talking and laughing about the engineer and the trick his friends were playing on him.

The conversation must have revived old memories, for after the chief had introduced Jennings, and while they were waiting for their trick to begin, he and his chum kept chewing the rag about Whitecliff Gorge. They recounted breezily old superstitions which the natives had woven over the place before the railroad came, and reminded each other of tragedies which had occurred there since the rails had been shoved through the forge.

They made frequent mention of Scottie McQuade and Whitecliff, and when the new dispatcher took his key those two names were fresh in his mind. He kept thinking about them all evening. He was thinking about them when he put out the order to 2nd Number 3 at Phantom Valley at 10.45.

McQuade had left Tuscany with an order giving him right over Number 6, Tuscany to Malpai. Because he was thinking about something else besides running his engine, and because his helper was short on steam, the eastbound train made much better time than he did.

Before McQuade arrived in Phantom Valley, it became apparent to

Dispatcher Jennings that he was going to have to change the meeting point between the two passenger trains, that he must move Number 6 up the hill against McQuade's 2nd Number 3 either to Whitecliff or else to Lava, the new passing track which had been put in halfway between Whitecliff and Phantom Valley.

Being new to the district, he called the chief to ask advice. The chief studied his train sheet. He decided that McQuade could almost make Whitecliff, but not quite. So he said:

"There's a heavy drag to the east through both those sidings. We never stop an eastbound train at either place if we can avoid it."

"Fair enough," Jennings agreed. "We'll fix our meet at Lava and put 2nd Number 3 in the hole there."

"Check," said the chief. He went back helping other dispatchers move delayed traffic.

Jennings had twenty-odd trains to keep moving. All of them were off time. Work piled up. When he was ready to change the meet between his passenger trains, Number 6 was almost due at Malpai; there was a freight on the main line at Phantom Valley with a drawbar out, and McQuade was in the tunnel.

He called Phantom Valley, but he had sent the operator a few minutes before to learn when the freight would be ready to move. Phantom Valley did not answer. Jennings next called Malpai and told him to stand by for an order. He went back calling Phantom Valley and kept calling it until he saw he was going to stop Number 6 unless he transmitted the order at once. So to prevent delay to Number 6, he shaded the rule and transmitted *first to Malpai,* the order instructing the two trains to meet at Lava.

When Phantom Valley called and set the board against 2nd Number 3, the dispatcher cleared Number 6 at Malpai and let them come on up the hill. He then transmitted the order to McQuade. It should have been the same order he had issued to Number 6. It doubtless would have been the same order if Jennings had not remembered that McQuade was pulling 2nd Number and that the engineer's friends were playing a trick on him to try to redeem him from the effects of a scare he had gotten in Whitecliff Gorge.

Recalling that fact, the names caught and held the focus of his attention. Instead of transmitting "Meet at Lava," he transmitted, "Meet at Whitecliff."

He failed to catch the blunder then. It did not show on his book because supposedly he had sent the same identical order to both trains, and the one he had written had been the good one. He cleared 2nd Number 3.

PAT MURPHY brought the order to the engine. Scottie read it aloud, tonelessly, as he read all orders these days: "2nd Number 3 eng 1804 take siding meet Number 6 eng 1723 at Whitecliff."

The peppery little conductor said: "Hurry up! Let's get movin'! And don't be all night gettin' down there, because we want to be in the clear when those fellows come so they won't have to stop on that grade."

So Scottie left Phantom Valley with a straight lap order over five miles of track between Lava and Whitecliff; and no earthly way to reach him, even if the dispatcher should later discover his blunder.

Number 6 had been fifteen minutes out of Malpai then. It required forty

minutes for the seven-mile climb from Malpai to Whitecliff siding, because the grade was heavy, and it ran in good weather without a helper. Scottie McQuade was allowed three minutes to the mile with passenger on the steep descent. That was twelve minutes to Lava and fifteen more to Whitecliff.

But tonight Scottie had the jitters. You know how it is. He was afraid of the grade, afraid of the train, and even more afraid of something the old seer had told him earlier in the evening at Tuscany. And so he used thirty minutes to travel seven miles. He was then nosing down the loop twelve miles an hour with his brakes set.

About every five hundred feet, the air whistle peeped "Increase speed." Bill thought he could hear Pat Murphy cussing through the whistle, but the harassed engineer ignored his signal. Bill, aware that somebody was going to have to answer for the delay, crossed the deck to say: "You're sure taking your time for it tonight, Scottie."

The other man winced, but without taking his eye off the track, he drawled:

"Yes, I am, Bill. They ain't holding so well tonight, and there's too many people on this train to take a chance on letting them get the bulge on me, especially with that meet at Whitecliff."

Bill remembered the first trip he had made over the road. He recalled that Scottie had not been so careful that time, even though he was meeting the same train there then with a freight. He stepped to the gangway, held to the grabirons, peered up the train and down the track.

Off to the right and behind them, four miles as the crow flies, seven as the track looped south and back, were the green switch lights and the red order board at Phantom Valley, and the yellow spark of a freight headlight. Somewhere in the high hung field, a red fusee burst into bloom. They both saw it, and Scottie asked: "You don't suppose that's meant for us, do you?"

There was no reason to suppose a fusee burning seven miles behind should be meant for them. Bill answered emphatically:

"Of course not. Who ever heard of trying to flag a train seven miles from its hind end? It's that freight fooling around up at Phantom Valley."

THE fusee disappeared. The edge on the fireman's tongue must have gouged the engineer, for he kicked off his brakes and let them get rolling while he charged his trainline for another set. They were not rolling fast, not more than fifteen or eighteen miles an hour; and they were rolling smoothly and not making much noise.

Eight hundred feet above Phantom Curve, Bill heard the eerie echo of a locomotive whistle filter into the cab. It was not loud; but it was clear and distinct, the *whooo-whooo-whu-whu* of an engineer sending a crossing blast or whistling for a curve.

Scottie almost tore the brakestand out getting to his feet. Bill started across the cab, but before he was off his own platform, Scottie had set the brakes in emergency and was whistling out a flag.

Bill yelled: "What did you do that for, hogger?"

"Didn't you hear that whistle?"

"Sure," said Bill. "It was Number Six whistling for Whitecliff."

Evidently Scottie had forgotten about Number 6. He looked foolish, but it was too late now to remedy the blunder of a nervous hand.

Emergency air quickly stopped the train a mile from Whitecliff switch, and five hundred feet from the cut where the 1608 had gone down into the gorge. Lights showed in the vestibules. The flagman hurried up the hill to protect his train in case the freight was coming behind them. The conductor and the porter came over.

While Pat Murphy's acid voice was caustically inquiring why the stop, and Scotty McQuade was trying to invent a sensible excuse, Number 6 poked her nose around the curve. She was a character not listed in the play the way Billings had written it. Pat let out a yell, and started around the pilot swinging a stop sign.

Scottie dashed up the steps, moving faster than Bill had seen him move since he had came out of the cab of the 1608 in January; and the fireman and porter went looking for a good place to slide down the dump.

The passenger whistle screamed. The stack quit shooting cinders. Number 6 stopped fifty feet away. The crew compared orders. They proved that the meet was on somebody else. The passenger hogger squinted at Scottie and inquired:

"What stopped you, McQuade? You were stopped, weren't you?"

"Sure, I was. I heard you whistling for the curve."

"Not me, brother. I didn't whistle for that curve. Haven't even touched my whistle cord since I signaled for Whitecliff two miles back."

"Then—" Scottie stared blankly at his fireman. "Then what in tarnation was that we heard?"

Before Bill had time to reply, the old passenger runner, who had heard how Scottie had gone off his speed, smirked and said drily: "Maybe it was a phantom whistle, McQuade."

"Do you really think so?" Scottie gasped, half credulous.

"Phantom whistle, hell!" Pat exploded, aware that if Scottie went getting new fool notions into his head he was done railroading. "What you heard was an echo from a freight train whistling up there around Phantom Valley."

BUT Scottie was not willing to accept the echo explanation. He was much excited. He told both crews that a friend in Tuscany had warned him Death was waiting in the pass that night. He repeated the story in Deserton next morning, and vowed that the sound he had heard was a phantom whistle, a warning from on high.

Pat and Bill refrained from telling him the bald truth that night. The unexpected turn had upset their plans. They went into another huddle with Bilings in his room at the Deserton "Y."

"It looks like this lap order's stolen our thunder," Hatchet-Face said gloomily. "The joke's on us now."

"Don't you think we'd better go right to him and spill the whole story?" Pat suggested.

The other conductor shook his head.

"Not now. He wouldn't believe us. He'd only think we were trying to kid him."

So they agreed to let the matter rest a few days, to see how Scottie came out of this new adventure. They waited in vain. He didn't come out of it well.

In Scottie's reaction to the fusee and in the way he had dashed back into the cab when Number 6 showed, Bill had seen definite signs of recovery. But that was past history. All that the unhappy engineer could talk about now

was the phantom whistle and what an uncanny prophet that old Indian bag of bones had turned out to be. Scottie was not superstitious, of course; but he laid off when he got back to Tuscany, and on one pretext or another he refused to work until the new moon was four days old.

His next job was hauling a stock train. Bill fired as usual, and his side kick, the incorrigible Pat Murphy, wrote out the wheel reports. They followed another freight, captained by Billings, which had pulled out two hours before, and overtook it at Phantom Valley, where both trains waited for Number 2. At length, as Hatchet-Face was about to leave, he climbed into Scottie's cab and warned the big blond hogger to keep his eye peeled going down the hill, because they were having engine trouble.

Billings' crew got going forty minutes ahead of the stock train. They must have been stepping right along, for Bill saw their tail lights just about even with the Indian village as his train was heading out into the main line. He saw them remain near the village for ten or fifteen minutes, then disappear into the gorge.

Scottie followed slowly. He used close to an hour going down. There was nothing wrong. His trainline was holding like a sealed tomb, and the pumps were supplying plenty of air to handle it. He just loafed along as he had been doing all spring. But he was not worried. In fact, he was feeling better than he had felt at any time since the wreck, and his occasional wisecracks to Bill showed it.

They went through the cut at 11.55. Work on the tunnel was progressing rapidly. The new grade, leaving the old main line about a thousand feet above the east switch at Whitecliff and plunging straight into the mountain, was partially completed, and a spur running up into the tunnel. Contractors were working two shifts, the second one knocking off at midnight.

As the stock train turned the curve where Number 1608 had gone down, a tremor ran through the engine not caused by rolling wheels or grinding brakes. It was quickly followed by a muffled *boom*. The engineer's gay mood changed suddenly. He peered around the boilerhead and yelled: "What was that, Donavan?"

"The construction gang putting off shots in the tunnel," Bill responded.

"It felt like a young earthquake," Scottie added nervously.

The fireman crossed to the right-hand side and they talked about the work in the gorge.

Bill said: "I'll be glad when they get the tunnel dug and the new tracks laid."

"Yes, it will eliminate a lot of kinks and cut the time on the hill," Scottie replied, without referring to the safety angle.

The fireman returned to his own side, because they were now running a series of sharp curves just above the east Whitecliff switch. While they were talking, Scottie had let the train get rolling fourteen miles an hour. That was faster than he had let a train roll in the gorge for five months. As he was in the act of setting his brakes to check it, Bill thrust his head around a window frame, saw a red light less than two hundred feet ahead, and whirled and shouted:

"Hold her, Scottie! This switch is wide open!"

THE engineer had intended to set his brakes with a twenty-pound reduction. Instead, he used emergency.

The huge mass of iron groaned and jostled. A few seconds later a pair of tail lights showed up below the switch, and Bill yelled again:

"It's Billings. The blamed fool's headed in here at Whitecliff and left the switch open."

They were not running fast enough to damage the rolling stock or hurt anybody, but Bill was very soon aware that they were traveling too fast to stop before going through the switch. He knew that once their engine was over the points, the only way they could get out of Whitecliff was to head through; because the locomotive, powerful as she was, could not back eighteen hundred tons up the hill. With Hatchet-Face in the siding and his engine on the bum, they might not get out of there for hours. Bill leaped off, raced ahead, threw the switch and turned the train down the main line where it could move.

They stopped fifty feet behind Billings' caboose. The back door was shut, the light on inside, and not a soul in sight. They could not understand it, for Billings was not the kind of conductor who heads into a sidetrack and leaves a switch open and his markers red.

Puzzled, they climbed out of the cab and walked down to the caboose. They did not even take time to light a torch. When they shoved open the door, the Seer of Phantom Valley was sitting on the right bunk with an old hogleg, a wicked-looking weapon, showing beneath his bed sheet. The ancient fellow was holding it in both hands, while Billings and his parlor man were meekly sitting on the bunk across the aisle. They must have been sitting there a long time, for there was quite a puddle of tobacco juice between the parlor man's feet, and neither of them was saying a word.

Nervously Scottie eyed the captive skipper and his jailer. Then: "What's the trouble, Billings?"

"Aw, this old fool—" Hatchet-Face began.

But the old fool interrupted with: "He no pay. I no go 'way."

"He no pay?" the engineer echoed blankly. "What he no pay?"

"Me tree dollar."

Knowing the situation as he did, Bill guessed at once that Hatchet-Face had lost the money in a poker game and the Seer was stolidly determined to collect.

But Scotty understood nothing. He glanced at the Indian in bewilderment. "How come Señor Billings owes you three dollars, big chief?" he queried.

"Me no chief," the Indian grunted.

"Merely a personal matter, Scottie," the conductor cut in, "but I do owe him three bucks. He flagged us with a crosstie up there at the village and waited till I caught the caboose to demand payment. But at present I'm broke. If one of you fellows—"

Conductor Murphy, having come down to investigate the delay, had slipped into the caboose behind them; and now advanced quickly, drawing a five-dollar bill through his fingers.

"I've got it right here, Billings," he said eagerly. "You can pay me when we get into town."

But Scottie's curiosity was aroused. "Wait a minute, Pat!" he said sternly. "What's going on around here?"

"Maybe this would be a good time to tell him," suggested Hatchet-Face; and Pat explained about the little scheme they had hatched up to aid Scottie in getting over the psychological effects of the wreck.

But Scottie, usually bluff and good-humored, flushed with anger, flushed to the roots of his curly hair. He paid

off the Seer himself and ordered the redskin to, "Get the hell off this railroad and stay off!" Then he turned on the two conductors. In choice terms he expressed his opinion of so-called friends who make a laughing stock out of a man in trouble, and said things which cut loyal old Pat Murphy to the quick. Then he strode abruptly out to his engine and continued his run.

THE over-wrought engineer did not speak to Donovan on the way into Deserton. Bill thought he was burning with wrath, but instead he must have been doing some serious thinking. When they had taken the engine to the house, and the fireman was picking up his grip and scoop to go to the washroom, Scottie asked sheepishly:

"I reckon I made pretty much of a donkey out of myself up there at Whitecliff tonight, didn't I?"

"You did bray pretty loud," Bill said, recalling the hurt look on Pat Murphy's powder-pitted face.

"I know," Scottie confessed, "but hang it all, I can't help it. I'm afraid of that place. I always have been and I reckon I always will be. I was carrying water for the construction gang sixteen years ago when it got my father. I was firing for my oldest brother when he went there in that head-on collision. I've always figured I'd get mine sooner or later."

"That's a lot of hooey," Bill answered heartily. "But if you really feel that way, why don't you quit this job and go hunt another?"

The engineer's homely face was puckered in serious thought, and his next words came in a drawl.

"I've thought of it; but you know, a guy hates to give up seniority he's worked years for, just because he's afraid. I've hung on thinking I might get a grip on myself. I just about had it, too, when that engine turned over up there with me last winter."

"There's plenty of other railroads, and you're still young enough to start over."

Scottie said he'd consider it. By morning he had determined to write the master mechanic in Pocatello, asking whether the Short Line was hiring engineers. He had Bill up early next morning. Together they went out looking for Pat Murphy, so that Scottie could square himself for the nasty things he had said the night before and at the same time break the news of the intended change. But Pat was not in Deserton. He had been called for a turn on Numbers 5 and 6. They did not see him for four days.

In the meantime somebody talked too much. It might have been one of the brakemen, or perhaps Billings. Old Hatchet-Face was pretty sore over the way Scottie had bawled him out that night in the caboose. When they returned home, even the girls in the eating-house were bantering him about phantom whistles, and blood on the new moon, and asking him how much the Seer charged for telling fortunes. Scottie kidded back at them in a lame sort of way, but most of the time he kept discreetly out of sight.

On the fourth afternoon, Scottie and his fireboy were called with Billings on a drag west from Tuscany. The big engineer had not yet heard from his inquiry in Pocatello, but while the air was pumping up the caller brought a message to the engine. Scottie tore it open, read it, and passed it on to Bill. It was signed by the master mechanic on the Short Line and advised him that they expected to begin hiring men within a week, and his application would be welcome.

Bill asked, "Are you going?"

"Yep," said Scottie. "If I stuck around I'd never hear the last of that deal. Why, even the hash-house gals have started calling me 'Phantom Scottie'." Bill smothered a grin. His friend went on: "I'll make this one trip, but after I get back I'll start packing."

THEY hauled twenty-four hundred tons up to Phantom Valley, filled there to thirty-five hundred, and left a little more than an hour ahead of Pat Murphy's Number 5. Among the cars they had picked up were five of rails, ties, and other supplies to be set out in the house track at Whitecliff for the new tracks into the tunnel, which was now nearing completion.

Scottie appeared serene and even gay that evening. He made scheduled time down to Whitecliff, handling the train with the touch of an artist, though he had thirty-five hundred tons. Billings walked over the tops, coming down the upper hill, so as to be on hand when they stopped at Whitecliff for their switching.

Uncertain whether they would have time to do their work and go down to Malpai ahead of Number 5, he had Scottie stop the train above the passing track switch so they could head in there if they didn't have time to go. Then he went back and cut off the five cars. The head brakeman ran down and lined the passing track switch.

Everything seemed to be running smoothly. But behind the scenes Fate was playing with marked cards. The dispatcher had evidently overlooked his hand, and the Whitecliff house track held only seventeen cars. The construction gang had their boarding and supply cars parked in there, leaving room for six more. When the crew arrived, they discovered that there were already three loads of crossties and two bad order coal cars in there. This left room for just one car.

Conductor Billings was standing in the gangway when they ran by the track. Both he and Scottie sized up the situation, and the latter said: "It looks like we're going to have to take these cars to Malpai and set them out."

"Not until after I've talked to the delayer," growled Hatchet-Face. "I got fired off one railroad for a stunt like that."

The main-line meet up the valley a few nights before had spurred officials to put a night operator on at Whitecliff. Billings went to the office, reported the situation to the dispatcher, and asked whether he should take the cars to Malpai for the local to bring back.

The answer came emphatically: "No! We want those cars left right there."

After some argument, the dispatcher gave him a protecting order and instructed him to take them up and shove them into the new track leading to the tunnel. Aware now that they would not have time to set out the cars and go to Malpai ahead of Pat Murphy's Number 5, they coupled up their train, pulled it into the siding, cut off the five cars, and backed up the main line with them to the tunnel spur.

It was ten minutes until midnight. The sky was radiant with stars. The night shift in the tunnel was knocking off, and some of the men were already coming out. They streamed along the bore in the glare of electric lights as Scottie was backing the five cars into the tunnel mouth. While Billings and the brakemen were bleeding the air out of them and setting their hand brakes, the blasting gang set off their last

shots. The earth shuddered. The gorge re-echoed with a long drawn *booooom.*

The brakeman's light signalled "Come on!" but the engineer did not obey. He had reset his brakes, and was lighing his torch in the firebox.

"Where are you going, McQuade?" Billings asked penetratingly.

"I've got a hunch," was the gruff reply.

Scottie did not say what his hunch was, but when he swung down from the gangway and started walking rapidly up the track, toward Phantom Curve, the others climbed out and followed him. The farther he went, the faster he walked. Five hundred feet from the engine, he broke into a run, the sound of his footsteps ringing on the ties and mingling with echoes of the crash still whispering through the gorge. He stopped just below the Bear Jump, where the 1608 had turned over; stopped and held the torch up above his head. He was still standing there when they arrived, standing as like a man turned to stone.

FOR ten thousand years that cliff had stood unchanged. For a thousand, maybe more, it had been used as a pass through the mountains. Moccasined feet had worn it smooth long before the Spaniards came. Sons of the *conquistadors* had driven mule trains over it. Yankee bull-whackers had made it a link in their trail to California, and for fifteen years the C&B had been running trains along it.

But beneath the cap rock towering five hundred feet into the air above was a fault, a crack. Maybe it had been made by an earthquake in another age, or left when the rock was forming. Incessant hammer of trains had failed to shake it; but the blasting back in the interior of the hill had finally found it out; and when the last shots had gone off, while Billings and his crew were setting out their cars, the cliff had broken loose just under the cap rock and had plunged down taking ninety-six feet.

For many seconds the four railroad men stared silently over the edge. Maybe all of them were inwardly quaking to think what would have happened if the cliff had broken while a train was running over it. Workmen released from the tunnel hurried up the tracks. Scottie looked at his open-faced watch and dropped it back into his pocket.

Billings voiced his thought: "Number Five's been out of Phantom Valley eleven minutes."

"Yes." The husky engineer pulled off his gauntlets and flung them on the end of a crosstie. "And we've got to get a flag out against them."

"We'll play hell gettin' a flag out against 'em," the conductor scoffed. "There ain't any of this crew got wings —yet."

Bill understood perfectly what he meant. The only trail into Phantom Valley was the one which had run along the cliff.

After a moment's thought the conductor told his brakeman: "You run back to the engine and bring me all the fusees you can find. Hurry now, because the delayer said they're right on time . . ."

"What do you figure on doing with fusees?" queried the engineer, who was now unbuttoning his overalls and jumper.

"We'll light 'em and throw 'em across and pray the hoghead will see 'em in time to stop before he falls in."

Scottie did not say it would require a better man than he to throw a fusee around that curving cliff and make it

"We'll Play Hell Gettin' Out a Flag Against 'Em. There Ain't Any of This Crew Got Wings—Yet"

stick. He tossed overalls and jumper into the pile with his gauntlets and sat down to pull off his shoes.

Billings watched him unlace the right one. Then: "What do you think you're doing?"

Scottie said: "I'm going to put a flag out against Number Five."

"You can't get across that place, you fool! A mountain goat couldn't."

But Scottie, exulting in his lean strength, drawled that he'd try, anyhow. And Bill Donovan, without saying so, felt the utmost confidence in his engineer. All summer he had watched the big fellow playing around with Norms on the car tops and elsewhere. He was aware that Scottie had risked his neck going over places more dangerous than this cliff, though this was dangerous enough. And so he kept silent, with just a fleeting look into the hard blue eyes to signify that he knew Scottie would make it.

For three hundred breathless seconds he and Hatchet-Face held lights for the blond giant, while a score of men looked on, half expecting every instant to see him disappear into the darkness. Clinging to the wall like a human fly, he worked his way sixteen feet down the corner, out across a narrow seam where the upper third of the structure had pulled loose from the lower and up the other side. A mighty cheer arose as he scrambled to the top and went trotting barefoot up the track carrying a flag against Number Five.

Scottie did not go to Pocatello. It was not necessary now, for he had flagged more than a passenger train on the cliff that night. He had flagged the ghost of fear which for years had loomed large in his own mind.

When the C&B quit detouring its trains over the other railroad and went running them on its own track through

the new tunnel, Scottie McQuade stayed on wheeling freight. Unerringly he let the heavy drags down those steep mountain grades along the old ledge where a man can spit four hundred feet out of his cab window straight down into the malpai rocks below. His eagle eyes are clear, his mind is free from trouble, and his hand is steady on the valve.

Railway Problems in Spain

LATEST dispatches from Spain indicate that nearly 3500 miles of the nation's 10,000-mile railway system are still under control of the Republican Government. These 3500 miles were nationalized at the outbreak of the present war and are being operated by the Minister of War, whose headquarters is in Barcelona. The remaining 6500 or so miles run through territory conquered by General Franco, the Rebel leader, and also operate under martial law; although theoretically these lines are run on the terms of their pre-war concessions and are subject to pre-war railway laws. The lines controlled by Franco comprise about 75 per cent of the Northern and nearly all of the National Western and the Andaluces railways; while the remainder, centering around the Madrid, Saragossa & Alicante lines, is still Republican.

The Republican lines, according to the Railway Gazette, are badly handicapped not only by diminished mileage but also by a fuel shortage, as practically all of Spain's bituminous coal is mined in the Asturias, in Franco territory, which means that nearly all the coal used on Government railways must be imported under wartime difficulties. And since the Insurgents captured the huge Tremp reservoir, Spain's greatest electric power plant, the MS&A electric lines have been seriously crippled. As a result, railway service in Government territory is, in many cases, limited to military necessities. Between Barcelona and Lerida only one passenger train a day is run for the general public. The same limitation exists on the line between Barcelona and the French border. There is even a shortage of oil, which restricts the operation of oil-fired railcars.

Franco's forces, controlling the Asturian mines and the Tremp power plant and receiving supplies from Germany and Italy, naturally have much less of a fuel problem and fewer operating difficulties, although, of course, military needs cut heavily into civilian rail service. The Rebels are greatly inconvenienced by the fact that Spain's railways were built largely to radiate out from Madrid; and as this city has remained in Government hands, the railway service between such important Franco-held centers as Salamanca and Seville is badly congested. At the north, however, the Insurgents' railways are reported to be operating somewhere near normal, the war damage there having been repaired. General Franco has authorized the spending of a large sum on renewals of track and rolling stock, and has named a commission to work out some sort of permanent arrangement with the railway companies, the scheme to include highway transport also.

(Editor's note: As we go to press, Franco's troops have just captured Lerida.)

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ALONG THE IRON PIKE

by JOE EASLEY

TROLLEY-CAR COURTHOUSE: AN IDEAL PLACE FOR "JUICE FANS" TO GET MARRIED. WILLIAM MILLER, JUSTICE OF THE PEACE AT AMHERST, O., BOUGHT THIS ABANDONED CAR, OLD NO. 155, FROM THE LAKE SHORE ELECTRIC, INSTALLED IT BEHIND HIS HOME, AND EQUIPPED IT WITH ELECTRIC LIGHTS, A HEATING PLANT AND FURNITURE

(From photo by Paul Eckler, 1628 Lake Ave., Elyria, O.)

IS MRS. BERTHA GONDER THE ONLY WOMAN ENGINE-WIPER IN AMERICA? SHE LANDED THIS JOB AT THE NP ROUNDHOUSE, LIVINGSTON, MONT., IN 1918 WHEN THE WAR WAS ON, AND HAS HELD IT EVER SINCE

(From photo by O. I. Sprugmen, Minneapolis)

"BETTY LOU," AGE 6½, CLAIMS THE WORLD'S RECORD FOR CANINE RAILWAY TRAVEL, HAVING RIDDEN NEARLY 400,000 MILES WITH HER MASTER, BAGGAGEMAN BILL WOCKS, BETWEEN KAMLOOPS, B.C., AND JASPER, ALTA. SHE IS SHOWN WITH HER OVERNIGHT BAG CONTAINING DISH, RAINCOAT, LEASH, ETC.

(From photo by J. R. Wanless, Canadian Nat'l. Telegrapher, Vernon, B. C.)

VERY FEW NEW RAILROADS ARE BUILT IN U.S. THESE DAYS. IN FACT, THE ONLY NEW ONE WE KNOW OF IS THIS 7-MILE STANDARD-GAGE LINE JUST COMPLETED BY THE UNITED ELECTRIC COAL CO. FROM ITS BUCKHEART MINE TO THE ILLINOIS RIVER AT LIVERPOOL, ILL., EQUIPMENT INCLUDES A 2-6-0 STEAM LOCOMOTIVE AND 50 CARS, EACH OF 50 TONS CAPACITY (From photo by Dr. Clyde I. McCumber, Lewistown, Ill.)

DELLINGER'S story, "The Man Who Couldn't Be Fired," (*Jan. issue*) revived memories of days when I worked in the B&M, East Somerville yard, in 1908-9. The bunch were mostly boomers, wild and rough; but whenever one of them ran into hard luck, the hat was passed and everybody chipped in. I remember the time a switchman named Harry Dougherty contracted t.b. The gang sent him to Saranac Lake, paying all expenses until he died.

As many of the boys know, I was a boomer myself for years. Am now a stationery fireman. One day in 1923 on the Maine Central I was called to flag a light engine, No. 151, Harry Harmon engineer. I did so. Immediately afterward I had quite a little stroll back to my caboose—29 miles, to be exact—with no deadheading pay. It's a walk I'll never forget.

Speaking of right-of-way graves, five Italians are buried in the MeC cut west of Jay Bridge Station, and this is the story: In 1895, when the road was being graded, the boss thoughtlessly had built a fire to warm up some sticks of dynamite, it being a cold day. The five Italians were standing near this fire when the dynamite got warm. Bones, legs, arms and pieces of flesh were picked up and buried near the railroad in an unmarked grave. My father told me this accident happened when he was employed laying masonry for the Chisholm bridge. On Feb. 27, 1920, Dad was killed when a work train collided with a freight near that bridge.—GIL- collided with a freight near that bridge.—G. J. FOURNIER, 59 Summer St., Biddeford, Me.

* * *

DOES anyone know the whereabouts of Pearl ("Baldy") Butler? Last I heard of him was when we were discharged in Dec., 1918, at Fort Benjamin. He married and started for Salt Lake City.—HARRY B. COKER, 3165 Emerson St., Evansville, Ind.

* * *

WHAT has become of "T-Bone" Campbell, "Shorty" McGovern, "Step-and-a-Half" Williams, and Engineer John J. Green for whom I fired out of San Angelo, Texas, on the KCM&O (now Santa Fe) in 1924? Also I want to hear about "Humpy" Davis, who worked for the Seaboard.—DEWEY GLAZEBROOK, Box 44, Rocky Ford, Colo.

AS an old boomer, I have been reading your magazine since 1907 (except, of course, between 1918 and 1929, when it was suspended). My first job was in the SP shops at Houston, Texas, in the days when every engineer had to do his own repair work on his engine at the close of each trip. Later I worked on most of the big roads in U. S., Canada and Mexico, as machinist, shop foreman, engineman, etc. Some of the "flags" (aliases) which I worked under were L. P. Ashley, Francis J. Howard, Leonard P. Atterbury and F. J. Howard. Please print this letter, because I want to hear from some of my old train crews who knews me when I was their hogger.—ALVIN L. SHERMAN, Drawer N, 14016, Trenton, N. J.

* * *

MY father, who is 80 and living in St. Louis, likes to talk about his boomer career. He says that when he was an engineer on the 162-mile Northern Ohio Railway, running out of Delphos, many years ago, he had a pair of deer horns mounted on front of his engine. One day the engine was laid up for repairs, the crew was furloughed, and it was then he started drifting.

Mother ran a boarding-house catering mostly to switchmen. I bade her good-by and got a job as callboy on the Nickel Plate. Later I broke on the Pennsy, laid rails on the Erie, passed coal on a steamship to Europe, became a teamster, a sawmill hand, worked around lumber yards, tried drop forging, served as a deckhand on the Mississippi and spent a year in a hospital with malaria.

In 1916 I was back at railroading, working for the Pennsy out of Conway, Pa. I served a stretch in the army, tried the Santa Fe but couldn't stand 7500 feet altitude. Got married and have been around Cleveland on the 7-mile Newburgh & South Shore, owned by the U. S. Steel Co. In 1931 I was laid off, but they made room for me in one of the steel mills, where I have been since. An army mule I was trying to ride gave me a sprained back, for which I draw a pension of $19 a month.—JAMES L. ALLISON, 4717 Birchwood Road, Cleveland, O.

* * *

AM I eligible for a seat in the Boomers' Corner? I began braking on the Iron Mountain at Argenta, Ark., in 1907. After two years I

quit and started booming. I worked for the NP at Livingston, Mont., the Burlington at Alliance, Neb., the UP at Denver and Kansas City; the Espee at Tucson and at Douglas four times; the EP&SW and Rock Island at Dalhart, Tex., Cedar Rapids and Valley Junction, Ia., and Herington, Kan., and a flock of other places.

It all started when my father, who was a conductor on the old St. Louis, Iron Mt. & Southern (now MoP) in Arkansas, got me a job as callboy at $45 a month for a 12-hour day, through which I landed a job as brakeman. I hadn't been braking long before I thought I knew it all. My conductor was Jacoway, who had been my father's hind man. One day we had a meet with an extra. Jacoway told me to flag to Germantown against the extra, riding on 106. I rode to Blackville, finding the extra at a curve. I told the engineer we were behind 106 but my crew didn't show up. Then I waited an hour and everybody was asleep, so I walked back to Germantown and found my crew on the siding. We went over and released the extra, as both places were blind sidings.

The dispatcher was wild. Both extras had meets, but he had not been able to move a train. The trainmaster asked me if I knew how to do a job of flagging, and I did thereafter.—M. L. SMITH, 566 W. Ramsey St., Banning, Colo.

* * *

AFTER 42 years of railroading, chiefly in engine service on Western roads, I am retired and enjoy life by making locomotive models and collecting wreck pictures, being a member of the Railroad Camera Club. In my day I worked with many good enginemen, including (in 1899) "Casey Jones," whose real name was John Luther Jones.—JAMES W. KENNEDY, Malone, N. Y.

* * *

BEFORE examinations were introduced on the railroads, new men were sent out to make themselves or fall down. Under such conditions, Conductor Jack Murphy of Los Angeles was put in charge of a certain local. They made pretty good time; and as they neared Pasadena, even before he had finished checking bills, his engineer was squawling for a signal. The city was only a mile distant, up a rather steep grade.

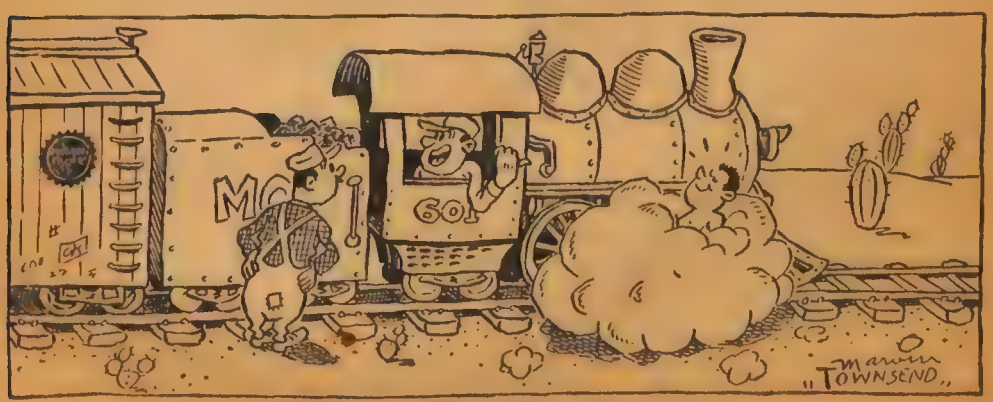
When Jack was climbing through the caboose window with waybills for cars to be set out, he suddenly recalled that a car for the cannery at the bottom of the hill would have to be left with the others at the Pasadena stop. Then as he scrambled back into his caboose, Jack remembered that the hind man had gone up ahead, although a flagman was needed right away. Straightening out this predicament gave the dispatcher a chance to send a message asking if the 1635 couldn't handle the tonnage without tying up the system and also to figure out a change in a meet with a tourist special.

Jack in his hurry forgot to send the changed order ahead, so the engineer did not shut off approaching Lamanda. A highball waved by the brakeman reminded Jack of his meet order, whereupon he pulled the conductor's valve.

The fireman, having a hunch, grabbed his lantern and started ahead on a run. Jack hurried up with the order, saying as he handed it to the engineer, "This settles my running." But the hoghead was used to green conductors, so nothing happened.

After unloading way freight at Azusa, Jack jumped to the ground and noticed for the first time that the hind end stuck out beyond the yard limit. He should have had a flag out. Running back 20 cars to the crummy, he found an extra with four empties, the engineer of which wanted to know: "Where in hell is your flag? If you don't know how to run a train you'd better go back to braking."

Jack relieved his overcharged feelings by bawling out his hind man for not going out with a flag. Being an old boomer, that worthy merely answered: "All right, cap. You're the boss."—E. A. WAMSLEY (*retired boomer*), 2415 Southwestern Ave., Los Angeles.



"That's Bozo Texino, Taking a Steam Bath"

BACK IN THE DAYS: "Next Stop—"

Conducted by DAVID MARSHALL

Automatic Signaling

THE railroad was largely an English invention, but its development owes an immense debt to the ingenuity and skill of Americans, including our brothers across the Canadian border, and one of our greatest achievements lies in the field of train signaling. Like the locomotive itself, the manual block signal was introduced here from England. But the automatic signal is our own. Devised by an American, it was by Americans carried step by step to the pinnacle of perfection, till it became, indeed, one of the astounding things of engineering science.

Semaphores and color lights, searchlights, position lights and color-position lights, all kinds can be automatic, just as any kind can be operated under the manual system. The type of wayside equipment, the precise manner of signal indication—whether it be by blade or lighting—matters not at all. But what makes the automatic signal is a track-circuit of electricity.

On "grown-up" railroads you may often hear it said that an automatic signal is always a three-indication signal, and that a simple two-indication signal should not be spoken of as automatic. But this is a false idea, based upon the limited observation of operating crews. Originally all automatic signals gave but two indications—many of them to this day do likewise—and to identify automatic signaling with any particular type of indicator shows failure to grasp a fundamental fact.

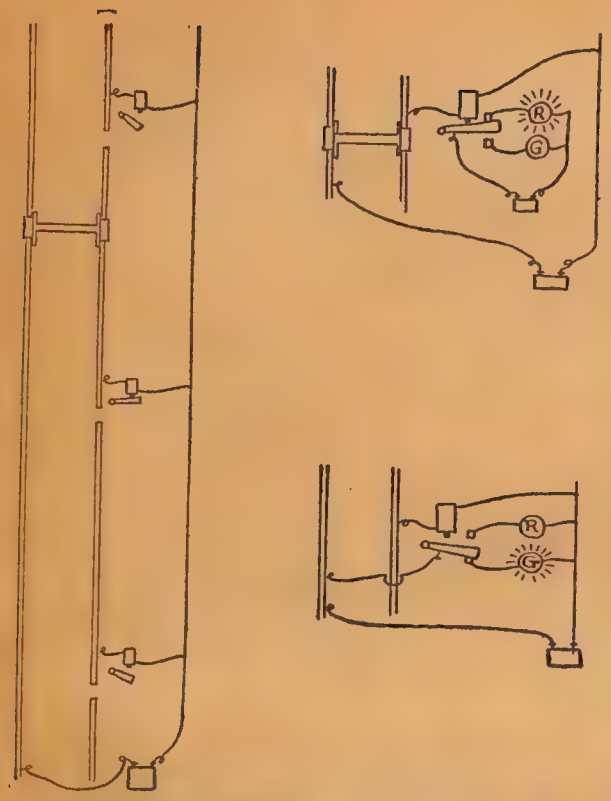
That fact has to do with the track-circuit. A main line is divided into any convenient number of "blocks," and each block is thus merely a measured length of track. In actual practice, the block may be as short as half a mile or as long as seven miles. And where one block ends and another begins, the rails are insulated. Thus the current cannot escape from one block to another, but the two rails of any given block are capable of conducting a flow of electricity over their entire length.

A block, then, forms a self-contained circuit, insulated at both ends, for the passage of electricity, while the rails themselves are the conductors through which the current passes back and forth along the whole block.

Where two blocks meet—where, for example, Block 27 ends and Block 28 begins—there is a wayside signal to the right of the track. This guards the entrance to Block 28 and is known as the home signal 28. Usually the number is painted on a small target. This in turn is bolted to the mast.

The signal itself is equipped with an electric battery and all the mechanism necessary for its operation. The mechanism operates to maintain a "clear" indication; and if anything goes wrong with it, the blade of the semaphore tumbles to the horizontal, or the tiny armature of a relay falls, the green blinks out and the red light springs to life. In either case, gravity alone produces this result.

It is important to notice this. The thing is constructed so that power is required to give the "clear" indication; and the "stop" indication results, or is obtained, when the power is interrupted. Thus the entire mechanism must be in perfect working order to give the "clear," but if any part of it fails, nothing but the "stop" indication is possible. So tribute is paid



How the Track-Circuit Works Is Shown In the Diagram at the Left, and What the Track Relay Does Is Indicated In the Two Smaller Sketches at the Right. Consider First the Circuit at the Left. Instead of Having a Separate Battery for Each Block, as the "Grown-up" Railroads Apply This Hook-up, the Model Railroader Needs Only One Source of Power to Operate All the Track Relays He Possesses. That's a Saving, and It Also Leaves One Rail Continuous Over Long Sections of Track to Serve as a Ground Not Only for the Track Circuit, but Also for the Power by Which the Trains Are Operated. Now Look at the Drawing at the Upper Right. The Block Is Occupied, the Relay Is Energized, the Armature Is up, Touching the Contact by Which a Purely Local Current Is Routed Through the Red Bulb. Thus the Stop Indication Is Given. This Local Circuit Is Used on the Real Railroads, and It's Good Practice on Model Roads, Too. A Pocket Flashlight Battery Can Supply All the Current Needed. Now Turn to the Drawing at the Lower Right. Here the Block Is Clear, the Armature Is Down and the Green Light Is Glowing. But Also, You'll Notice, We've Eliminated the Local Circuit, and Simplified Matters a Great Deal, by Combining the Two Batteries Employed Above. This Hook-up Is to be Preferred to the Other, but It Requires More Power and Makes Necessary Bulbs of a Higher Resistance. Finally—if You Wish to, and if Your Transformer Will Carry the Load, You Can Also Use the Same Battery Shown in the Lower Hook-up to Operate the Trains. All You Need Do Is Connect the Positive End to Your Third Rail

to the first principle of signal engineering, that if anything happens to equipment it must happen on the side of safety.

But the mechanism here spoken of has no direct connection with the track circuit. It draws its power from its own battery, locally; and the entire operation of the signal results from the opening and closing of this local circuit. We need not inquire into the precise method. It is sufficient merely to keep in mind the distinction the track-circuit on the one hand and the local or operating circuit on the other.

And while we are on the subject we may observe that in the case of light signals, the bulbs are lighted by still a third circuit separate and distinct from the operating and the track circuit alike.

The track circuit is hooked up in either of two ways. One method, known as the closed-circuit system, is extremely costly to operate, for it places a never-ending drain upon the source of power. The other method, known as the open-circuit system, is not quite so safe in theory, though in actual practice it seems to work as well—and it shears off 90 per cent of the electricity bill.

The closed-circuit system is built up in this wise: At the far end of the block is a storage battery, and at the near end an electric relay. (As a matter of fact, the relay is enclosed within the housing of the signal mechanism; its relation to that mechanism will presently be seen.) From the battery, the current flows to one rail and through this rail for the entire length of the block to the relay, and from the relay to the second rail and so on back to the battery. Thus the circuit is always closed, the current is always flowing. And so long as the tracks are clear the relay is energized, the armature is held high, frozen to the poles.

Now it is this armature, held in this high position, that closes the local circuit, supplying thus the power to push the sig-

nal to the "clear" indication and to hold it there in spite of the power of gravity.

But when a train enters the block, the rail current is short-circuited by the wheels. The current continues flowing—from the battery to one rail, through the train to the other rail, and so on back to the battery. The relay, however, gets none of this. The magnet loses its power, the armature tumbles down. In its high position, it kept the contact which closed the local circuit. Now that circuit is no longer maintained, and the semaphore tumbles to the "stop" indication—or else the falling armature, parting from the one contact, strikes another, and the red ball takes the place of the green.

Finally, of course, the train passes out of the block and into the next block in advance. As the last pair of wheels cross the tiny bit of insulation, the short-circuiting is ended, and the current from that distant point reverts to its normal course through the track relay. Thus the signal mechanism is once more activated, resuming the tension which alone can keep the signal at the "clear" indication.

Observe four features of this system:

(1) Anything that short-circuits the two rails, whether it be a train, a car dropped off the end of a train, an open switch, a runaway boxcar, or the wreckage of an automobile, must cause the signal to fly to the "stop" indication.

(2) The failure of the track relay to function properly will prevent anything but a "stop" indication.

(3) If the track battery goes dead, the signal must likewise fall to the "stop" indication.

(4) If a break in either rail occurs anywhere within the entire block, the effect must be once more to throw the signal to the "stop" indication.

Thus we see at work again the twin doctrines of our signal engineers, that the apparatus must be perfect in all its parts if a "clear" indication is to be given, and that if anything should fail, mechanical or electrical, it must fail on the side of safety.

"All Right, Casey Jones! Luncheon Is Served in the Diner"

Similar, yet very different, is the open-circuit system. Here again the signal mechanism draws its power from a local circuit; indeed, the signal hook-up is the same as before. The track circuit, however, is from battery to relay, from relay to one rail, and—skipping across the tracks—from the other rail back to the battery. Thus the current never flows unless the gap from rail to rail is closed as by the wheels of a train. When the block is not occupied, the track relay is not energized; the armature hangs in the low position, and there establishes the contact which closes the local circuit; the signal mechanism goes into action, and the "clear" indication is sustained.

When a train enters the block, however, the track circuit is thereby closed; the track relay is energized, the armature leaps up to the poles and the local circuit is broken. Thus the signal falls to the "stop" indication.

The bad features of this system are that if a wire breaks, if a connection becomes loose, if the track battery goes dead, or if the track relay jams or otherwise fails

to function, the local or operating circuit will remain closed after the passage of a train into the protected block, and in that case the signal will give a false indication of "clear," leaving the way open to disaster. A rail-break, too, may cause a false indication to be given, depending on where it occurs in respect to the train's position.

But these things are what may happen when the system breaks down. When everything is in working order the system performs quite perfectly—and, after all, a proper crew of inspectors and maintenance men can be relied on to keep it in working order. If a battery fails, an emergency relay lets go and another battery is cut into service; the track relays don't jam with grease and grime any longer, for relays are enclosed today in glass jars, hermetically sealed. Rail-breaks, on the other hand, are usually found out before they happen. The Sperry detector car spots a flaw before the fracture begins.

The closed-circuit system is, from an engineering viewpoint, infinitely to be preferred, for the only false indication possible here is a "stop" indication. What model railroaders are to note, however, is that both systems may be found in actual operation on actual railroads of the United States and Canada, and either system may be properly adapted to model railroading.

The diagrams presented on these pages show the precise manner of signaling a model pike, according to the open-circuit system. This would seem to be the better system for our purposes, for the other would add dollars every month to the family electric bill. The hook-up, however, differs but very slightly. Anyone wishing to inaugurate the closed-circuit system—just for the sake of being ultra-ultra-accurate—can make the changes indicated above.

In adapting the automatic signal to model railroading, the one important change from "grown-up" railroad practice has to do with the track battery. Instead of this, we employ a dry cell, a reducer or a common transformer. Again, we use but one transformer for many blocks, insulating only one rail between blocks and keeping the other rail intact, as a ground-rail, over the whole length of the system. This ground rail is used also for grounding the power by which the locomotives operate—the power drawn from the third rail.

But though we make use of a common ground-rail, it must be kept in mind that the two circuits are distinct and separate just the same, the one running from transformer to third rail to locomotive to ground-rail and thus back to its point of origin; and the other flowing from transformer to track-relay to block rail and thence—when the block is occupied—through the wheels to the ground-rail and back to the point of origin.

In the case of the track-circuit, the point of origin may be a battery or it may be the same transformer; it makes no difference at all and the fact remains that the two circuits are independent of each other. But you must, of course, be careful to hook things up correctly and to insulate your rails properly.

How to insulate them? Simply take a hack-saw and cut through the rail at the point at which you mean to separate the blocks. It takes all of forty-five seconds to do this. The result will be a clear gap equal to the thickness of a piece of cardboard. Take a bit of that cardboard, smear both sides with glue and insert it in the gap you have made. Then let it dry for a few hours and shave off all its protruding edges with a razor blade. What you cannot shave, you can sandpaper off or just rub off with a handy stick of wood. In the end it ought to be almost invisible.

If you are using tinplate tracks, on the other hand, you can insulate the joint as well by using a match-stick as you can with a fibre prong. But to signal tinplate tracks at all is impossible in the first place, unless you insulate the running rails from one another. This is a mean, tiresome job, requiring time and repaying you with nothing obvious to show for your effort.

If you must do it, however, you must. It involves ripping one running rail out of every section of track you possess, wrapping the flanges in cardboard and then clamping them back in place—insulating, in each instance, one of the running rails in the same manner in which the center third-rail is insulated.

Wayside signals of the tinplate variety can be adapted to operate in response to the breaking and closing of the track-circuit, and so, of course, can the scale products. So, too, can the signal you may make for yourself—a subject which we shall be getting round to presently. In this article we have dealt only with the system itself and the electrical hook-up, leaving it to you to decide whether you will harness your particular track-circuit to semaphores or light signals.

Thus harnessed, the system will be strictly automatic. If a train enters your block, the signal will fly to the "stop" indication. It it drops a car behind it, and that car alone remains within the block, the signal will remain at "stop." If a switch is opened anywhere within the block, the signal will go to the "stop." If a loose freight car drifts into the block from the other end, if the track is blocked by a wreck or anything at all that is capable of closing the track-circuit, the effect is just the same.

Nothing will do this but automatic signaling, in either of its two forms. Any method of signaling which does not do all this and do it whether a train within the block is moving or standing, is scarcely a thing for Americans to be proud of—for America's grandest contribution to the art of railroading is just this automatic signal.

Next Month: Semaphore and Searchlight Signals

Big Rail Executives Had Fun with Miniature Trains at the Annual Dinner of the American Railway Magazine Editors Association in Chicago Recently. A Double-Tracked Model Road Was Operated on the Long Banquet Table. (Left to Right) E. E. Norris, President of the Southern; ..enry A. Scandrett, President of the Milwaukee; Miss Martha Moore, President of the A.R.M.E.A., and Fred Sargent, President of the North Western

A Scale Model of the Pennsy's Streamlined "Broadway Limited" Was Used as a Subject Recently at the First Public Demonstration in This Country of Television, the Newest Forward Step in Radio, Which Was Given on the Stage of a Miniature Theater in the Radio City Building, New York City, under Auspices of the Radio Corporation of America. The Train is Shown Entering One of the Portals of the Hudson River Tunnels on the Last Lap of Its 860-Mile Journey from Chicago to New York

Model Engineers and Clubs

FEBRUARY'S here again—and the twelfth annual show of the New York Society of Model Engineers opens on Saturday the 11th. At ten o'clock that morning the society's new headquarters will be thrown open to the public for the first time, and the first trains will run over the vast new railroad which we described for you in the January number. It is hoped that 15 miles of track will be ready for traffic. And all through the show the gangs will continue at work, adding to the milage; thus you'll have something to see this year that you may not ever see again. The show, as in previous years, will run for 15 days.

In describing the New York Society's new layout two months ago, we told of the efforts then being made to obtain *rolled* steel rails. We are now in a position to announce that the boys have got them, and that, thanks to their grand offer of "spot cash for half a ton," they are now for the first time available to all model railroaders.

What happened was this: Half a ton was found to be still too small an order to be turned out unless the purchaser was willing to pay for making the rollers. Eventually, however, the well-known hardware house of Patterson Bros., 10 Park Row, New York City, came forward with an offer to buy the rollers if the society would supply all necessary blueprints, certify their accuracy, and purchase half a ton of the finished product.

As we write this, the rollers are in place and the first sample rail has been calibrated, showing an extreme degree of accuracy. Within a week several tons will have been run off. It will retail in normal lengths of six and twelve feet—but, unfortunately, no one can tell us yet what the retail price will be. So on that score you'll have to bear with us for just another month; or else write to Patterson's—and ask them.

* * *

SAN FRANCISCO MODEL R.R. CLUB (Kenneth W. Adams, pres., 2924 26th Ave., San Francisco, Calif.) is busily fixing up its system so it will have something of unusual interest to show model-railfans who visit the San Francisco World's Fair.

"Our scenery," reports Pres. Adams, "represents two sections of the SP, namely the Santa Cruz Mts. and the Mt. Shasta Division. It is being built on forms and covered with netting and glued muslin, which in turn is covered with plaster; powdered felt is blown over it all, and finally the thing is colored. At the same time the electrical gang is progressing on our 'engineer control.' This will be installed all at once, but meanwhile we are using sectional controls."

The main line is 880 feet long, traversing mountains and flat country in a U-shape. Tables are draped with burlap to hide the legs. The burlap will be painted to blend in with landscape. Recent nationally-known visitors include A. C. Kalmbach, editor-publisher of *The Model Railroader;* Minton Cronkhite, model builder, and W. K. Walthers and Rollin J. Lobaugh, manufacturers. Operating nights are the first Tuesday of each month, when the public is welcome. Sometimes as many as 150 visitors can be counted at one time in the big clubroom in the SP's Third St. station.

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HAPPY VALLEY R.R. (C. Benjamin Russell, 115 Malone Ave., Belleville, N. J.) has had another disastrous wreck—but just for the sake of the newspaper photographers and for the good cause of popularizing model railroading. This road almost specializes in wrecks, to judge by the pictures we've seen. The company has, as a matter of fact, some of the finest wrecking equipment in America. So why not a few wrecks?

* * *

LEHIGH MODEL R.R. SOCIETY (Robert Zellner, sec., 2111 Washington St., Allentown, Pa.) reports an attendance of 1427 persons during the first two days of their recent annual exhibition. The show was held at 519 Hamilton St., Allentown, in quarters donated for the purpose. And one of the tricks was—To drive home to the public a proper realization that model railroading is not a matter of playing with toy trains, the boys refused to admit to their exhibition any persons under fourteen, except when accompanied by an adult.

* * *

HOUSE OF HOBBIES (Edgar Zehrung, mgr., 2800 S.E. 82nd Ave., Portland, Ore.) comprises the Oregon

Model Craftsmen, Inc., the Oregon Pacific Rys., and the Montavilla Camera Club. It was opened last Nov. 12th. The dedication ceremony was conducted by A. C. Kalmbach, editor-publisher of *The Model Railroader*, Wauwatosa, Wis. Exhibits included a model railroad in operation, a live steam locomotive and car carrying 12 passengers, working models of airplanes, boats and gas and steam engines, and a fully equipped woodworking shop. Also photos, stamps, dolls, etc. The golden spike in the model road was driven by a local journalist, while Master Mechanic Treton of the Portland Traction presided at the opening of the 15-in.-gage line.

December's special monthly exhibition was devoted to bells of many kinds, January's specialty was old clocks, etc., and February's will be valentines.

The House of Hobbies has 3 old interurban cars parked or rather built into the main structure and used respectively as an office, a photo darkroom and a machine shop for the various clubs that meet there weekly.

* * *

SPRINGFIELD (MASS.) MODEL R.R. SOCIETY at 50 Willow St. reports 1200 persons attended their recent annual exhibition. Each of the 50 or so club members contributed rolling stock or motive power for this show, so that altogether many different trains were operated on schedule, keeping 3 or 4 men busy as dispatchers with regular shifts. The club is proud to announce that no wrecks occurred in the tunnel.

* * *

GRAND RAPIDS HOBBY CLUB (Ray Nawrot, pres., 1118 Elizabeth Ave., Grand Rapids, Mich.) is completing the first year of its existence with a roster of 25 members. It is largely a model railroad outfit, and has ample headquarters in the W. Fulton St. passenger station of the NYC Railroad at Grand Rapids. An O gage pike is now in operation on the main floor of the station; while on the second floor the construction of an HO line is to begin shortly. In addition to Mr. Nawrot, officers are: H. Kamstra, vice pres.; Carl A. Meyers, treas., and R. R. Rozema, sec., with E. Pierce, A. Webster, F. M. Joslin, and A. Goudy as directors.

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BERKSHIRE HILLS R.R. (Berkshire Hills Model R.R. Society, Frank L. Scidmore, sec., 48 Linden St., Pittsfield, Mass.) is in process of rebuilding—in a structure 58 feet long by 26½ feet wide. After two years in the basement of Pine Tree Inn, the society determined to go in for something more extensive. A garage was available at 54 Gordon St., with four times the floor space. They took it, signed the lease and went to work. Membership rose from 15 to 22. The new layout is featured by curves ranging from 8½ to 13¼ feet in radius. Work nights are Mondays. Fridays are work plus operation. The officers are Clifford Goodrich, gen. mgr.; James Driscoll, treas., and Mr. Scidmore, sec.

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SEASHORE MODEL R.R. CLUB has just been organized under the presidency of Dr. Woodward Wilson, 212 Martin Rd., Absecon, N. J.

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CHESTERFIELD & MERRIMAC R.R. (John F. Turrell, Kent, Conn:) reports a current schedule of two passenger runs daily. The roster shows one locomotive, 4 passenger cars, and 9 freight cars. The engineering department cares for 65 feet of O gage tinplate track.

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PARK ROSE MODEL R.R. CLUB (A. H. Mead, sec., 4835 N. E. 106th Ave., Portland, Ore.) has been organized with 27 members who hope to lay 9 miles of scale O gage track. The group has selected the Union Pacific as a prototype to be modeled.

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IDYLE WYLDE MODEL R.R. CLUB (Raymond J. Ryan, sec., 448 Broadway, Albany, N. Y.) reports the completion of its double-tracked main line and the building of a substantial portion of its Mountain Division.

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LITTLE ROCK AND VICINITY.—All persons interested in forming a model railroad club are requested to contact J. B. Davidson, 1700 Rice St., Little Rock, Ark.

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SAN BERNARDINO AND VICINITY.—Those interested in forming model railway club get in touch with Lloyd A. De Vito, 1332 Goodlett St., San Bernardino, Calif.

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SYDNEY MODEL RY. CLUB (J. Page, pres.) reports that a jolly second anniversary was observed recently, with a membership of 23 men, several of whom specializing in building North American freight cars. This organization has the use of a large room at the Railway Institute, 273 Castlereagh St., Sydney, Australia, and its activities are duly reported each month in the new illustrated magazine, *Railway Enthusiasts*, published by Frank Shennen, Cathcart House, 11c Castlereagh St., Sydney, Australia.

Mr. Shennen advises us that a sample copy of this magazine will be sent to anyone in North America upon receipt of 18c in the form of a reply postage coupon or an international money order, either of which is obtainable at any post office. And we wish to add that American fans writing to Australia should bear in mind that the letter rate to that country is 5c an ounce or fraction thereof, *not* 3c. Don't send U. S. or Canadian coins or stamps to Australia. The boys there can't use 'em.

The Model Trading Post

FOR SALE OR EXCHANGE

AIRBRAKE valve assembly complete, some controller handles, reverse handles and destination signs from Cuty and the abandoned Niagara Falls & Lockport interurban cars. Will trade for model street cars or Lionel O gage elec. train eqpmt. I also have prize pictures of our abandoned city and interurban cars, to swap for pictures of other interurban and city type cars or Lionel O gage eqpmt.—Robt. H. Brown, 168 Downing St., Buffalo, N. Y.

* * *

LIONEL O gage eqpmt., including Twin Super loco 256, loco 253, 2 Pullmans 607, obs. 608, derrick 810, frt. cars 812, 816, 815, 817, 2 prs. auto switches, 2 prs. hand switches, about 50 secs. of track, bridge, signals, other accessories. Will sell separately or complete for highest offer.—F. W. Kendall, 2422 University Ave., Bronx, N. Y. City.

* * *

COAL-FIRED live steamer, 4-6-4-wheeler, three-quarter inch scale, rolled steel plate fitted with 6 bronze main driving boxes. Full spring rigging, steel-leafed springs, hangers, saddles, equalizers for all main drivers. Main driving wheels 17-spoke fully counterbalanced gray iron wheels, 90% machine-finished. Leading truck built up of quarter-inch steel plate spring rigging, complete ready for axles and wheels; wheels, 3 rough, 1 finished, 1 pattern. Trailing truck equipped with 2 rough cast wheels, 2 finished wheels and 1 wheel pattern. Jaws cut out and boxes ready to fit into position.—A. F. Kaiser, 60 Russell Ave., Buffalo, N. Y.

* * *

NYC Hudson loco, intricately detailed, with elec. headlight, firebox light, and a model roadbed, no motor. Will sell for best offer.—Alvin W. Nitsch, 2752 Bosworth Ave., Chicago.

* * *

ST.-GAGE outfit consisting of Lionel steam-type loco 400E, tender 400W, crane car 219, gondola 220, floodlight car 208, cab 217, 2 switches 210, crossover 20, type T transformer, rheostat 95 whistle cont. 400 TW, 22 curved, 38 str., 4 extra frt cars. Entire outfit only 2 mos. old. Will sell for $60.—James A. Gregg, Postville, Iowa.

* * *

NYC Hudson 2 9/16-inch gage drivers, axles, tender and pilot wheels; also Lionel engine and cars, complete set. In exchange I want HO or O gage scale eqpmt.—N. W. Rehfuss, 1739 N. 43rd St., Camden, N. J.

* * *

BODIES of 5 pass. and 15 frt. cars in CD scale—⅞ in. between rails. Complete except for couplers, trucks and lettering. I want OO gage cars, track or locos. Also have several actual railroad blueprints to exchange for OO gage eqpmt.—Dillard P. Spangler, 233 Nuchols Apts., Maryville, Tenn.

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AMERICAN FLYER O gage B&O steam-type loco and cars, tracks and eqpmt. In exchange I want HO gage eqpmt., tracks, or cash.—Robert Schricker, 612 Englewood Ave., Chicago.

* * *

FIVE-EIGHTS-INCH scale models 1900 type Consolidation, 1870 type 0-4-0 tank switcher and first Central Pacific loco, *C. P. Huntington*.—A. D. Slater, Apt. 279A, 2402 Cedar Ave., Cleveland, O.

* * *

LIONEL O gage eqpmt., *Hiawatha* and track, UP streamliner and track, pass. coaches, frt. cars, stations, other accessories. Write for list and prices.—John D. Denney, Jr., 30 S. Second St., Columbia, Pa.

* * *

REBUILDING my model road. Will sell used O gage ¼-in. scale frt. cars and few pass. cars, $3.50 up.—A. J. Volk, Bloomfield, N. J.

Warning!

NO charge is made for listings in this section. We are not responsible for errors due to the failure of correspondents to write clearly. Nor can we guarantee, hereafter, to print any item longer than 40 words, unless there is a special reason for doing so.

Items for May issue (out April 1) must be received before Feb. 14. Preference is given to those accompanied by our latest Reader's Choice coupon (page 143), properly filled out. If you don't want to clip the magazine, make your own R.C. coupon.

Enclose a stamped envelope when you answer any of the items listed here or when you write to us for free advice on model railroad problems. Many readers refuse to answer cards—except when 2¢ reply postal-cards are used.

MARX remote control elec. train with automatic switches which I would like to exchange as part payment on a live-steamer, scale model or Tom Thumb loco. —Robert Beverly, Priest River, Ida.

* * *

LIONEL 107 D.C. reducer. In exchange I want No. 600 pass. car, must be gray and red; No. 620 floodlight car and bumper 025.—Lloyd Byer, 322 Convent Ave., N. Y. City.

* * *

FRT. cars 212, 214, 217, 218; pass. cars, and an engine. What have you in exchange?—James Logan, 107 E. 5th St., Lansdale, Pa.

* * *

AF streamlined steam-type engine and AF transformer 1271, unused. Make offer. Want West Shore timetables prior to 1930.—Fred Meckel, 99 N. Prospect Ave., Bergenfield, N. J.

* * *

PATTERNS and dies for quarter-inch scale frt. cars, pass. cars, locos, Brill gas-elec. cars, truck parts, etc.; also patterns for steam locos in half-inch, three-quarter inch and 1½ inch scale. I will trade castings from above patterns in return for machine work, model steam engines of any kind, trolley car or what have you? Also 10 built-up stock cars, quarter-inch scale exhibition models; cost $22.50 ea., sell for $10 each, brand new, never run.—Wm. H. Cox, 1146½ S. Clark Drive, Los Angeles.

* * *

LIONEL 249E loco, tender, new, $6.50; also boxcar 814 and caboose, $1.35 ea.; UP streamliner 752E, $10, no track. All postpaid. I also have Beucher trumpet to swap for Lionel Hudson or *Hiawatha* or AF 1939 train set, O gage; or sell trumpet, $20.—Geo. Williams, Box 164, Hillsdale, Mich.

* * *

BALDWIN LOCOMOTIVES mag., vol. 16, No. 4, Apr. '38, offered in trade for 10 Varney HO gage frt. cars, assorted.—Thomas Town, 345 N. Orange Grove Ave., Burbank, Calif.

* * *

O GAGE Lionel 258 and 252 steam and elec.-type locos, need collector shoes; 810 series box, gondola, hopper, floodlight and derrick cars; coaches 607 and 608; about 100 secs. of str. and curved track; 2 prs. elec. switches; two 90 deg. crossings, tunnel bridges, etc.—S. M. Graham, 216 Richmond Terrace, St. George, Staten Island, N. Y. City.

* * *

QUARTER-INCH scale locos and cars, virtually new, reasonable price. Or will trade for HO gage eqpmt.—Albert W. Burger, 1167 Hoe Ave., Bronx, N. Y. City.

TWO Lionel std.-gage locos, both twin-motored, one latest engine, R.C. and one old engine and 2 cars to go with it. Enough track to go around two 13 ft. x 13 ft. rooms. The above is in perfect cond. The new engine is elec. type practically new. I want in exchange O gage eqpmt. or what have you.—J. Ray Diefenderfer, 133 Long Ave., Orwigsburg, Pa.

* * *

O GAGE 3 prs. 79-in. scale drivers $1 per pair; *Com. Vanderbilt* 1699E, track, pair remote control switches, transformer; 8 prs. wheels, cost $22.80, for $11. In exchange I want OO scale loco.—Wm. Baier, 4844 W. Arthington, Chicago.

* * *

LIONEL 700EW scale Hudson; used only month; $60, postpaid.—R. Preston, 38 Essex Ave., Swampscott, Mass.

* * *

TINPLATE eqpmt., perfect cond., all Lionel standard; steam loco 390; elec. loco 9U; Pullman and baggage car 429 green; 2 Pullmans 428 green; obs. 430 green; box car 214 brown; caboose 517 green; gondola 212 red; refrigerator 514 white; lumber 511 green; derrick 219 green; accessories, 1 set of LCL, bumper 25 light; cross track 20; 3 pr. switches 210.—E. W. Way, 5 Virginia Road, Bellerose, Long Island, N. Y.

* * *

LOCO 380E, $4; loco 8, $3; warning signal 75, $.50; T transformers $4; all Lionel.—Howard E. Pape, 115-53 173rd St., St. Albans, Long Island, N. Y.

* * *

ST-GAGE Lionel and Ives eqpmt. including 2 complete engines and cars, 8 switches, 2 crossovers, tunnels, bridges, and 40 or 50 each of str. and curved track. I want in exchange an approximate set-up of O gage eqpmt.—J. Maynard Wettlaufer, Freeport Junior-Senior High School, Freeport, N. Y.

* * *

BEGGS train set 1871, Bing 2990 0-4-0 loco, Ives 1122R loco, Ives pass. cars 141(2) and 142, AF 13 0-4-0 loco, Lionel 820 searchlight car, six 12-wheel Lionel-Ives pass. cars, considerable wide-radius and std.-gage track, Lionel *Hiawatha* articulated cars (3), lockons, AF 233 arc light, AF 2116 lite bell danger signal, AF215 water tank with red lite, AF 2118 block signal, rheostat, Thordarson 110V transformer, Lionel 082 semaphore. All O gage eqpmt., in good cond.—Alden Miller, 3448 33rd Ave., Minneapolis, Minn.

* * *

ST.-GAGE 392 EW loco with cars, new, $29. Various Lionel signals, used; make offer. Loco 318E and ten 309 and 310 cars, used, $10. Loco 390E, tender lettered Pennsylvania, $7.50. Bumper 25 with light, $.75. About 1100 feet of Western Coil standard gage aluminum track, made for center third rail, mounted on ties, $.20 a foot including fish-plates and ties. Western Coil standard gage switches complete and ready to operate, $5.50 each. Several scale model std.-gage cars on 500 series trucks, $3.50 each.—Leonard M. Blum, 807 Engineers Bldg., Cleveland, O.

* * *

O GAGE tinplate; Lionel 259E loco and tender $4; 264E *Com. Vanderbilt* loco and tender $5; B transformer, 75 watts, $3; 2 bumpers 025, $.75 each; lamp posts 56 and 59, $.50 each; signal 73, $1; four 12-inch built-up pass. cars, baggage, obs., 2 coaches, color Pullman green, set $7.50; seven 9½-inch AF frt. cars, box, oil, lumber, caboose, 3 gondolas, set $7.50; Little Jeff 75 watt transformer $2.50; midget 75 watt transformer $2.50. All postpaid.—S. Blanc, 372 Sherman St., Denver, Colo.

* * *

ST.-GAGE eqpmt. Lionel pass. cars 332, 418, 119, 490, 18; frt. cars 511-12; engines 384, 8, 6. Track. Ives antique hopper car. Other items. Send 3c for list.—Browning Halley, 1721 Hildacrest, Huntington, W. Va.

* * *

LIONEL locos, cars, track, transformer, other tinplate eqpmt.; 40 *Popular Science* magazines; 18 *Railroad Stories*; foreign stamps, albums, books, coins, Lionel magazines etc. Will exchange for U. S. and foreign stamps. Send stamp or reply postal for details.—Ernest McCabe, Box 53-A, Rte. 1, Gulfport, Miss.

* * *

O GAGE Scale Craft boxcar complete with automatic couplers. I want HO gage eqpmt.—B. E. Gaffey, 1840 Ferry St., Salem, Ore.

* * *

SCALE CRAFT O gage Hudson loco and tender, good operating cond., virtually new, for sale for kit price or will swap for other O gage motive power. Send stamped envelope for details and photo.—R. Westphal, Niles Center, Ill.

TWO 4-ohm rr. sounders and keys offered in exchange for O gage eqpmt.—Charles Miller, Box 192, Fairview Ave., Nanuet, N. Y.

LIONEL O gage work crane 2810, good cond., offered in swap for 16 secs. 072 wide-radius curved track 760.—J. R. Krevet, 104 Penna. Ave., Hillside, N. J.

AF loco motor, elec. type, O gage, with wheels, no body; will trade for 603 pass. coach.—A. J. Fee, 285 Warburton Ave., Yonkers, N. Y.

LIONEL *Hiawatha,* with whistle; other O gage locos, cars, switches; offered in exchange for HO eqpmt.—Bill Quinn, 2111 W. 84th Pl., Los Angeles.

WHAT cash offers for Lionel O gage eqpmt.: 2 locos, gon, hopper, caboose, floodlight car, obs, 2 Pullmans, 2 switches, two 90 deg. crossings, 50 secs. track?—Thomas Pool, 2925 Dixwell Ave., Handen, Conn.

MAKE offers for Lionel O gage locos 263EW; 260E, with new-style remote cont.; 250EW *Hiawatha;* all excellent cond.—F. C. Van Cucha, 3754 E. 156th St., Shaker Heights, O.

FOR SALE: AF caboose 3017, logcar 3046, boxcar 3015, sandcar 3016, bag. cars 3150, 1207, Pullman 3161, ob. cars 3162, 1205, pass. loco 3313, frt. loco 3192, 8 secs. curved track 470 and 8 of 400, 16 secs. str. track 401, 6 of Lionel str. track, 75 watt Jeff. transf., all excellent cond.; clips and rubber sleepers for track, cars double-trucked; all for $20 or will sell separately.—James Crozier, 256 E. Mary St., Galesburg, Ill.

WANTED

STANDARD-GAGE eqpmt. wanted, as follows: Ives 1764E, Ives 190-series frt. cars, Ives 1134, Ives 1770; Dorfan std.-gage locos, cars, track; Voltamp and Boucher eqpmt.; AF 4000 series caboose, logcar, boxcar, tanker, hopper, gondola, stock car; AF 4122 mail set, 2043 signal, 2021 gate.—A. McDuffie, 431 Octavia St., San Fracisco.

LIONEL std.-gage 514 or 514R wanted. Will exchange or sell 511, 512 or 515, in good cond.—Wm. F. Barrie, 282 Hooper St., Brooklyn, N. Y. C.

HO EQUIPMENT, track, cars, engines. I offer in trade Lionel loco 254, cars 813, 814, 817; 1 Lionel O gage truck; 12 str. track, 6 curved track and one 45-degree crossing, all good cond.—Michael J. Pagliango, 784 Putnam Ave., Brooklyn, N. Y. City.

LIONEL steam-type loco or 4-6-2 type with no motor or other kind of power. I offer in exchange back issues of *Railroad Magazine,* some of '36 and all of '37 and '38. —Lowell Sparrow, 137 E. Mulberry St., Springfield, O.

ST.-GAGE 45-degree crossing.—Charles H. Smith, Jr., 213 Dewey St., Edgewood, Pittsburgh, Pa.

O GAGE frt. trucks; Lionel motor units; 4 wheel Lionel, AF & Ives frt. cars. Reasonable cond. Will pay cash.—J. B. Champlin, 912 S. Willson Ave., Bozeman, Mont.

HO or OO scale model loco and cars; in exchange I offer 50 Western story books, all good cond.—Glenn Mader, 307½ N. Locust St., Grand Island, Neb.

ST.-GAGE eqpmt., track, locos, cars, etc. Will pay cash.—Roger E. Smith, 900 F St., Meadville, Pa.

HO eqpmt. wanted. I offer back issues *Railroad Magazine, Model Craftsman, Model Builder,* and magazine put out by Sante Fe System, bound in book form. I also offer book *How to Become an Engineer,* Frank Tousey, pub. 1902; an Ives motor 3255 and a cast-iron boiler and cab by Bing, 5 in. long, numbered 9-1897-B. Also I offer photos of old Pacific Coast road, showing roundhouse and turntable at San Luis Obispo, shed, a few cars, loco, etc. Will trade or sell any or all.—C. F. Chrisman, 3967 Lemon St., Riverside, Calif.

MU MOTOR unit with three-quarter inch scale wheels, complete. I offer 10 vols. *Howkins Electric Guide* or home-made 110 volt, 1500 watt transformer, 23 lbs.—Elmer Cumming, 3039 Bartlett St., Oakland, Calif.

FOREIGN-MADE American-type frt. cars in any gage; any make of car, any cond., so long as finish is original. Also want AF and Ives lithographed frt. cars. State herald, color, cond., number and year of manufacture.—Louis H. Hertz, 640 Riverside Dr., N. Y. City.

O GAGE track, switches, accessories, locos, etc. I offer in exchange 3000 different stamps, including 750 mint, over 70 sets, and 250 U. S.—Stanley Szumski, 8315 S. Essex Ave., Chicago.

SCALE RAIL or O gage eqpmt., reasonable price.—Milton Manwiller, president, Park Rose Model Railroad Craftsmen's Club, 4835 N.E. 106th Ave., Portland, Ore.

WILL pay $5 each for two HO gage locos, 2-6-4 or 4-6-4. I also need HO reefers.—Scott Little, 155 Shenandoah Road, Hampton, Va.

I WANT No. 81 rheostats, cars for *Hiawatha,* ¼-in. scale frt. cars.—Harvey Houck, 930 W. Gray St., Elmira, N. Y.

WANTED IN CANADA

LIONEL O gage frt., Pullman, baggage, obs. and work crane cars wanted. Send photos, prices and cond.—L. W. Burnside, 1009 Wellington St., Ottawa, Canada.

HO GAGE engine and tender and reverse wanted. I offer stamps of nearly 100 countries, worth $10.—Ross Robertson, Box 129, Ladysmith, B.C., Canada.

LIONEL frt. cars, 800 series; rheostat 81 and semaphore 80N or 82N, not necessarily in working order. I offer in exchange a signal radio key and sounder, 4 ohm resistance, both in perfect cond.—Lorne Bunt, 728 2nd Ave., E., Owen Sound, Ont., Canada.

O GAGE eqpmt., especially CPR or CNR cars wanted. In exchange I offer marine telescope in good cond. 17 in. extended and 7 in. telescoped.—Rene Dubois, C.P. 184, Farnham, Que., Canada.

This Detailed Wooden Model, 110 Inches Long Including Tender, 5-Inch Gage, Presumably Built by a Man Named R. B. Foster, Has Just Been Acquired by A. Sheldon Pennoyer, 114 E. 66th St., N. Y. City. He Wants to Know More About It. Who Is Mr. Foster?

Locomotives of the Spokane, Portland & Seattle R. R.

Photo by H. B. Miller, 852 Lincoln Ave., Palo Alto, Calif.

Ten-Wheeler No. 151, One of the Few Older Engines Constructed Directly for the SP&S

Class	Numbers	Cylinders (Inches)	Drivers (Inches)	Pressure (Pounds)	Weight without Tender	Tractive Force	Builder and Date
4-4-0 Type							
L-1-L-5	50-55	These were originally A&CR, were built at Schenectady and Rogers in 1889-1897. Are now scrapped or sold. The boiler of No. 55 is used at a heating plant at LaMont, Wash.					
2-6-0 Type							
M-1	200	Scrapped in 1928; built by Baldwin in 1888 for the NP as No. 552					
M-2	201	19x24	55	140	119,000	18,760	Brooks, 1895, as GN 420
0-6-0 Type							
A-1	1-5	20x26	51	180	150,000	31,200	Alco, 1907, as NP Class L-9
A-2	6	Built by Baldwin in 1887 for NP as 988; sold to St. Helen's Dock & Terminal Co. in 1921'					
A-3s	7, 8	20x26	51	180	153,800	31,200	Alco, 1914

Photo By A. Farrow, 132 S. 10 St., Auburn, Wash.

No. 1 of the Gales Creek & Wilson River (Owned by the SP&S) Used to Be Colorado Midland No. 27; Has 19 x 26 Cylinders, 51-Inch Drivers, 160 Pounds Pressure, Exerts 24,548 Pounds T.F.

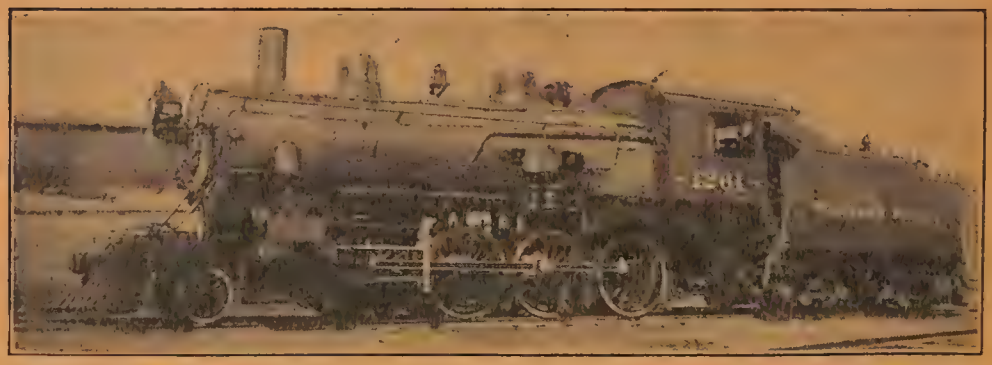


Photo by A. Farrow

SP&S No. 328 as She Looked When She Was Northern Pacific No. 1261

2-8-0 Type

N-4	300-305	22x28	51	150	159,900	33,800	Baldwin, 1888-91 as NP 52, 59, 69, 71, 72, 74; No. 300, 305 scrapped in 1937
				(Nos. 303, 304 weigh 150,000 lbs.)			
N-5	315	22x28	51	150	166,600	33,800	Alco, 1901 as NP 1255; scrapped '37
N-6	325-329	20x34	63	200	198,000	36,700	Alco, 1901, 02; as NP 1255, 1260, 1251, 1261, 1273
N-7	335-339	22x30	63	200	194,000	39,200	Alco, 1903 as NP 1283, 1288, 1291, 1284, 1286
N-1	350-352	22x26	55	170	150,900	32,470	Brooks, 1892 as GN 530, 539, 561
N-2	355-368	20x32	55	200	195,000	39,563	Baldwin, 1907 as GN 1256-1264, 1228, 1240, 1253
	(Nos. 366-368 have 210 lbs. pressure, exert 41,540 lbs. t. f.)						No. 365 built by Alco in 1905 as GN 1208
N-3	370	20x26	51	180	146,500	31,140	Pittsburgh, 1903 as 19 of AC&R

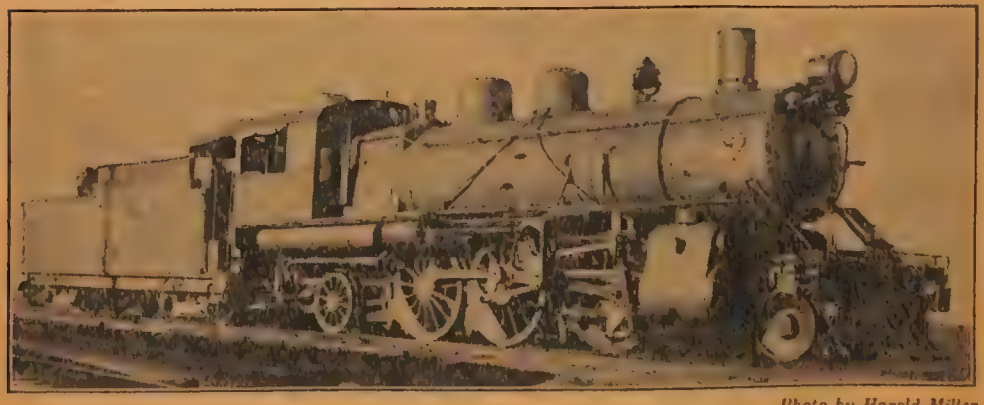


Photo by Harold Miller

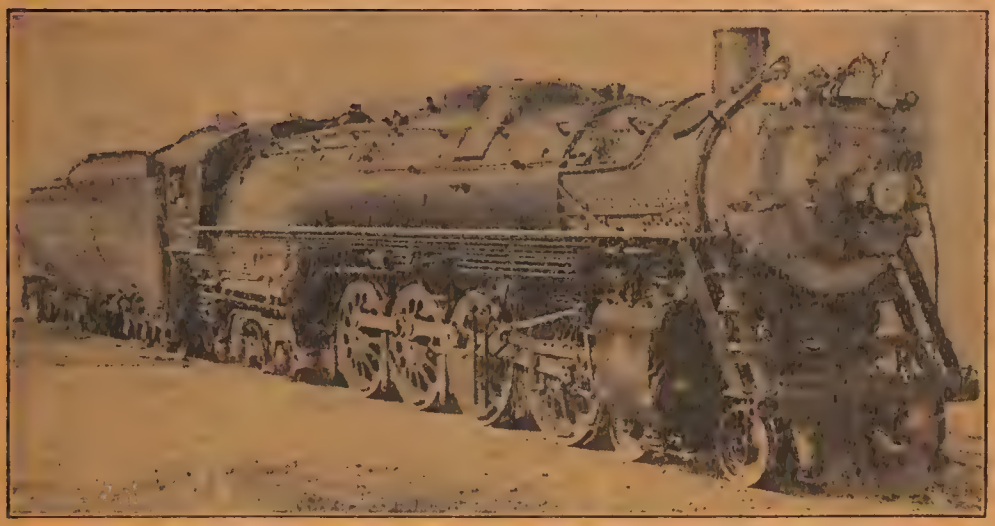
No. 465, Built by Baldwin in 1907 as Great Northern 1566

2-6-2 Type

F-1s	450-451	23x30	69	190	240,200	38,240	Baldwin, 1907 as GN 1555, 1565; No. 450 scrapped in 1937
				These exert 48,430 pounds t.f. with booster.			
F-1s	452-464	23x30	69	180	219,600	35,190	Baldwin, 1907 as GN 1575, 1577, 1581, 1583, 1587, 1593, 1638, 1603, 1569, 1595, 1507, 1600, 1601; Nos. 454, 457, 459, 460, 462-464 were scrapped in 1937
F-1a	465-466	23½x30	69	185	209,000	37,760	Baldwin, 1907, 06 as GN 1566, 1549

4-6-0 Type

D-1s	100-109	23½x30	73	180	240,000	31,723	Baldwin, 1910, as Nos. 1043-1052.
			Nos. 100, 101, 106, 108 scrapped in 1937; others rebuilt to 4-6-2				
D-2s	150, 151	22x26	73	175	173,800	25,725	Baldwin, 1911
D-3	152	20x26	69	200	155,600	25,623	Schen., 1898, as NP 258; scrapped 1938
D-4	153-155	20x26	63	175	139,600	24,675	Cooke, 1898, as AC&R 16-18. No. 155 scrapped 1937
D-5	156	18x24	63	180	117,900	18,885	Baldwin, 1901, as No. 2 of S&IE; scrapped in 1937
D-3	157,158	20x26	69	200	155,600	25,623	Schen., 1898 as NP 251,257; No. 158 scrapped in 1938
	(Nos. 366-368 have 210 lbs. pressure exert 41,540 lbs t.f.)						
D-6	159	19x26	63	180	152,000	22,860	Rogers, 1902 for GN
D-7s	160-162	22x28	73	180	177,000	28,440	Baldwin, 1910 as GN 1074-1076
				(No. 162 has 200 lbs. pressure, 31,000 lbs. t.f.)			



First of the Three Great New 5000-Horsepower 4-8-4 Types on the SP&S Is No. 700. They Are Almost Exact Counterparts of Northern Pacific Class A-3

Photo by Joseph Lavelle, 4615 66th St., Woodside, L. I., N. Y.

Formerly Great Northern No. 3043 Was No. 505

Photo by Albert Farrow

Originally Constructed in 1910 as Great Northern 1052, a Ten-Wheeler, This Engine Became SP&S 109; Was Then Rebuilt to 4-6-2 Type in the GN Shops and Numbered 625

Photo by Albert Farrow

Because the SP&S Is Owned Jointly by the Great Northern and the Northern Pacific, Most of Its Older Locomotives Came from Those Roads; and Its Newest Ones Were Built to the Specifications of the Latest NP Jobs. The Six 4-6-6-4's (No. 901 Above) Are the Same as the NP's

Photo by E. J. Roberts

Only Five of the 4-4-2 Type Are Left on the SP&S. Here Is No. 608, Snapped at Portland in May, 1937

				2-8-2 Type			
O-1s	500-507	28x32	63	190	306,500	64,220	Baldwin, 1913, 17 as GN 3026, 3028, 3029, 3099 3039, 3043, 3023, 3024
O-2s	525	25x30	63	200	265,000	50,600	Alco, 1910 as NP 1698
O-3s	530-534	28x30	63	200	320,000	63,460	Alco, 1917, 1913 as NP 1765, 1704, 1727, 1744, 1747
				(No. 530 weighs 328,000 lbs.)			
				4-4-2 Type			
C-1	600-609	22x26	73	200	228,900	26,400	Baldwin, 1909, as GN Class K-1 Nos. 600, 604, 606, 607 scrapped 1937, 1938
				(These exert 35,520 lbs. t.t. with booster.)			
				4-6-2 Type			
H-1s	620-625	23½x30	73	210	283,100	58,580	GN, 1927-29; rebuilt from SP&S 103, 107, 102, 105, 104, 109
				These correspond to Great Northern H-7s Pacific type; work done at GN Hillyard shops			
				4-8-4 Type			
E-1	700-702	28x31	77	260	485,500	69,800	BLW., 1938
				4-6-6-4 Type			
Z-6	900-905	23x32(4)	69	250	621,000	101,500	Alco, 1937
				(Same as NP Z-6)			

Gales Creek & Wilson River (Owned by SP&S) 4-6-0

102 1, 2 Built for Colorado Midland by Schen (as Nos. 27 and 18) in 1890; No. 2 scrapped in 1932.

A&C R stands for Astoria & Columbia River, acquired by SP&S in 1908 (ran Portland to Astoria, was built 1898). S&IE for Spokane & Inland Empire; Nos. 156, 157, 158 are owned by Oregon Trunk Ry., subsidiary of SP&S.

In Future Issues: Locomotives of the Chicago Great Western, Kansas City Southern, Alaska RR, Northern Pacific

The First Passenger Train of the Norman R. Smith Railroad Heading up the Turnwater Valley. (See Page 124)

The Shortest Railroad

That Title Is Claimed for Many Short Lines, but the Tiniest One in Washington Seems to Have Them All Beat

By H. E. WEBSTER

UP IN a narrow wooded pass of the Olympic Mountains south of Lake Crescent in Clallam County, Wash., you can find, by diligent search, a tiny lost "streak o' rust" that is, or was, within certain limits, the shortest standard-gage railroad in the world. Its light rails are now crumbling with rust, while its ties, in the perennial shadow of stately Douglas firs, are rotted beyond the use of any earthly being except bugs, worms and snails, and are partly covered with parasitic growths.

This abbreviated pike never had a president, nor any other officer, nor a board of directors to direct or misdirect its destiny. All it had was a builder, and he left scant information for future historians. But one of the pioneer citizens in that locality, G. M. Lauridsen, has written a book entitled *The Story of Port Angeles and Clallam County;* and from this book, together with scraps of information from other sources, you can reconstruct the story of what actually transpired.

At the time the rails were laid for this little pike, in 1890 or '91, excitement was rife in the settlement of Port Angeles because a big railroad was projected in that direction. Port Angeles was famed as the second National city in the country. Its site had been authorized by President Lincoln himself, in 1863, to compete with the Canadian fur-trading post at Victoria, B.C., seventeen miles away across the strait of Juan de Fuca. And for a good reason were its pioneer citizens getting ready to welcome the great iron horse.

That reason was—*timber.* Billions of feet of fir, spruce, cedar and other woods blanketed the mountains and, in fact, the whole of the great peninsula of what was then Washington Territory. It was, perhaps, the finest timber in North America. One of the red fir trees in that area was celebrated because it scaled 60,000 feet of merchantable lumber. This virgin forest wealth was ripe for sawmills and transportation.

True enough, Port Angeles was not entirely cut off from the rest of civilization. Now and then a ship sailed in by way of Puget Sound, for this fast-growing community was situated on a magnificent harbor. But boats weren't enough. What the town wanted, according to Mr. Lauridsen; what its citizens had struggled, prayed and fought for over a period of twenty-five years, was railroad connections with the outside world.

"Nearly every year during that period, as the spring came with budding trees," he says, "came the spouting revival of our hopes. New rumors 'The railroad is coming!' rekindled our hopes. But as regularly as these came, with the same regularity they faded in the fall. We had railroads 'coming' from the south, east and west. We talked railroads so much that at times we made ourselves believe that Port Angeles would be the New York of the Pacific Coast."

That struggle began in 1888. Union Pacific had surveyors in the field north of Olympia. Major R. R. Harding of that

The First Railroad Train Eastbound out of Port Angeles, Wash., July 21st, 1914, One Week Before the World War Started

company had applied for a franchise to build a terminal ship dock—and the UP did build a dock. People from all over the Puget Sound area flocked in to buy real estate. Then so-called hard times cruelly pricked that bubble.

But hope never dies; and soon other projects mushroomed into growth in the forest country. For one, the Chicago, Burlington & Quincy was purportedly on its way West and would make the lumber and fur settlement a world metropolis. Alas, it never got there! In 1903 other rumors gave the impatient lumbermen something to talk about. It seemed that a certain railroad would start at Everett, Wash.; but because that one was likely to claim Everett as its main terminus, the plan was not popular in Port Angeles.

However, something really did get started in the year 1903. Norman R. Smith succeeded in persuading Eastern capitalists to open their money-bags, on the ground that the freight and sawmill possibilities of that area was a profitable investment; and he began building a railroad.

A standard locomotive, named *Norman No. 1,* was shipped in on a scow and put to work by the Smith-Mastic Construction Co., hauling material on the new grade. More than three miles of railroad were completed; and along in October, 1903, Mr. Smith invited a party of townsmen to take a ride on the first passenger train to the end of the line. The "passenger coach," as you can see from the photo, was a construction flatcar upon which were placed crude wooden seats.

A little later something happened to the financial structure of Mr. Smith's railroad and it curled up like a morning glory in the blaze of noontide sun. But optimism persisted a while longer. The Port Angeles *Democrat-Leader* of April 30th, 1904, carried these alluring front-page headlines: "Bonds Are Assured! Knickerbocker Trust Co. of New York Gets Behind Port Angeles Pacific Railroad With $2,000,000." It would have been great news if it had been true; and when Mr. Smith returned from the East after presumably closing

The World's Shortest Standard-Gage Railroad Is This Brief Stretch of Track in the Deep Woods near Lake Crescent, Wash. Its Light Rails Are as Rusty as the Little Tin Soldier in Eugene Field's Sentimental Poem, and its Old Rotting Ties Are Now Fit Only as a Habitation for Wood Lice and Such; but It's a Railroad Nevertheless. Or Is It? What Would You Say?

this deal, he was wined and dined by the grateful lumbermen. But time passed and nothing else was accomplished. The two millions melted into thin ozone, and finally there was nothing left to do but call in a receiver to bury the railroad. And thus the PAP passed into the cemetery of dead dreams.

Strangely enough, during all those exciting hopeful events, the citizens of Port Angeles lived within walking distance of a completed railroad—if you could call it that—and yet they did not even know such a thing existed. It is this line which, not without reason, may be spoken of as the shortest standard-gage railroad on record.

In the days when Port Angeles was thrilled over the possibility of the Union Pacific pushing into Clallam County, the alert Mr. Smith was looking for a feasible pass through which the UP could reach the booming town. He consulted trappers, timber cruisers, hunters and woodsmen; and at length decided that he had found the "only" pass. Mr. Lauridsen says Smith had it figured out that a railroad must come into Port Angeles from the west, and the only approach was on the south side of Lake Crescent.

At the point where the present Olympic highway is blasted out of a rocky promontory and fenced, the mountainside is almost perpendicular. It is some distance above the water to a narrow bench. That bench is seemingly the only place a railroad could get through without enormous expense of blasting a right-of-way.

Mr. Smith conceived the idea that any railroad would want that pass and would pay a big price to obtain it. He procured a full iron rail, cut it in two, had it hauled to the lake, and with block and tackle had it hoisted up to his place and laid on ties. The venture must have cost a little money and a lot of hard work. Who, if anybody, helped him, not even Mr. Lauridsen seems to know.

In a sense, that midget pike which meanders nowhere constitutes a railroad. But it proved to be a futile gesture. It did not prevent the Milwaukee Road from eventually building into Port Angeles. And, indeed, under the laws of old Washington Territory, the only way it could have kept a big railroad from using that pass was to prove public necessity. And what public necessity could have been shown for a fifteen-foot line isolated on a mountain top?

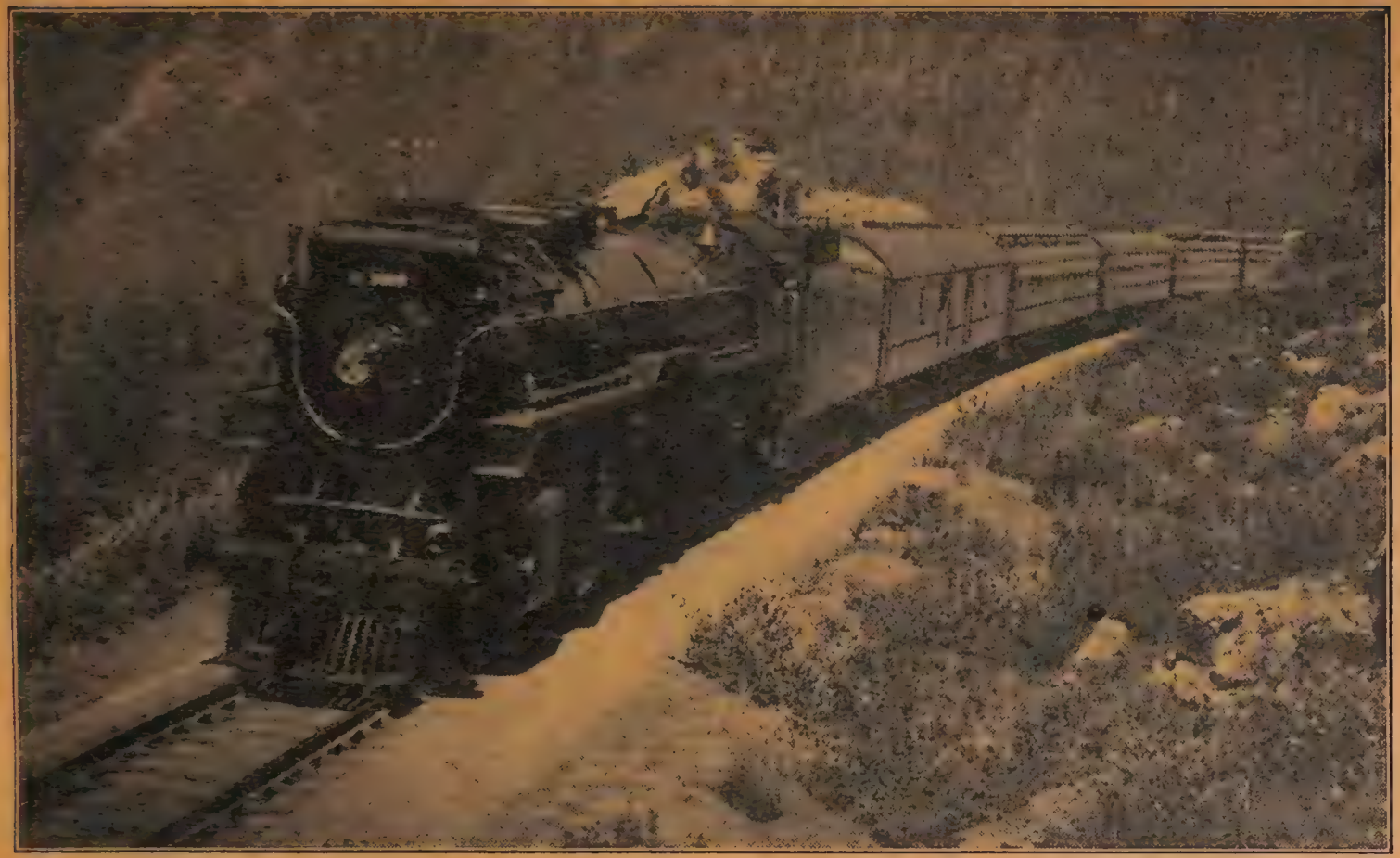


Photo by G. H. Soole, Railroad Photographs, 47 Royal St., Allston, Mass.

"The Dominion," Canadian Pacific Cross-Continental Express, Eastbound from Vancouver to Montreal, Passing the Turnout at Partridge, B. C., in the Canadian Rockies. The Locomotive Is the Mighty 5900, First of the Super-Oilburning 2-10-4 Types

On *the* Spot

Blanche Mosler

MORE THAN thirty - two years have passed since this magazine made its experimental first run, years that have etched themselves deeply into history; but during all that time only two authors have succeeded in convincing us that it was possible for a woman to write the kind of railroad fiction that could interest men.

The first of these two, you may remember, was Mary Frances Maskell (Mrs. J. C. Carlisle of Little Rock, Ark.). Mrs. Carlisle sold us two short stories. Like most good writers, she gathered her material from life itself, from the hard authentic school of experience. She told us that she had been born in a one-room log cabin; that at age seventeen she had married a carefree boomer switchman and later traveled around with him from one job to another, sometimes to no job at all; and that after he died, she had married another railroad man, a hogger on the CRI&P.

With such a background, you can readily see why Mrs. Carlisle used some of it as fiction material. Her first published yarn, "Main Lines Blues" (May '31), created a widely favorable response. She followed it up with "Ex-Brakeman" (Feb. '32), which also was well received; but after that she unaccountably dropped out of the picture.

During the seven years that followed, no woman sent us a usable rail-fiction manuscript, the field meanwhile being covered entirely by men. But now, at the end of a sabbatical period, as it were, pert little Blanche Yvonne Mosler decides to try her hand. Miss Mosler's first offering, "Railroad Town," is printed in this issue.

The author was born twenty-six years ago in Oklahoma, the state in which she still lives. Her present address is 125 N.W. 31st Street, Oklahoma City. Her father, like Mary Maskell's second husband, is a Rock Island engineer; and it was from him, together with her own keen observations, that Blanche has learned most of what she knows today about railroading and railroad men and their families.

After graduating from high school, she specialized for a while in music, with the purpose of becoming a concert pianist; but when her funds ran out she gave up this ambition, about three years ago, and turned enthusiastically to writing: short stories, poetry, and a novel, the latter not yet finished. "At present," she says, "I am studying foreign languages and philosophy, besides reading a great deal of history and good fiction. But I have never gone in for writers' courses, because I feel that writing is something you must work out for yourself."

Her father, who is Blanche's constant source of information and her severest critic, began railroading on the CRI&P in 1900 as a fireman; was promoted to the right-hand side in 1903, and retired on a pension last year at the age of sixty-nine—leaving his impressionable daughter to carry on the railroad tradition in a literary way.

Incidents in his own life which Mr. Mosler tells the girl supply her with fiction material. Such things as this: Late one night about 36 years ago, when he was firing on passenger train No. 35, the engine

turned over into a rain-swollen creek near Union City, Okla. A violent thunderstorm was raging, and the men in the cab barely saved their lives by swimming to shore. The coaches did not turn over right away, but soon the pounding storm had so undermined the roadbed that they, too, wobbled and sank down on their sides. Such events could, with a little sleight-of-hand, Blanche feels, be woven into a readable fiction story.

Miss Mosler hails from the same state that shelters Don Livingston, the inimitable creator of *Sol McCool*, freight solicitor. In fact, *all* of our recent fiction contributors, for reasons we can't explain, live west of the Mississippi. No wonder some of our fans kick once in a while: "Why don't you give us more stories about the big Eastern four-track pikes?" Well, this is why: Both E. S. Dellinger and Ed Samples reside in New Mexico; Harry Bedwell makes his home in California, Jimmy Earp in Kansas, Charles Layng in Illinois, Chauncey del French in Oregon, G. A. Lathrop in Colorado.

We'll be waiting, as usual, for the readers' verdict on the present issue of *Railroad Magazine*. We want to hear especially what you think of our new "discovery," Blanche Mosler. If you'd like to see more of her stories, say so on the Reader's Choice coupon (page 143), or in a letter or postcard. As you know, we count the votes and comments received each month, listing the fiction, true tales, illustrated features and departments in order of their popularity This is how you voted on the January issue, those of you who did vote:

1. The Rat-Hole Division, H. G. Monroe
2. Man Who Couldn't Be Fired, E. S. Dellinger
3. True Tales of the Rails
4. By the Light of the Lantern
5. On the Spot
6. Tom Thumb Railroads, Charles F. Carter
7. In Search of the Sun, Harry Bedwell
8. The Humble Switcher, Arthur Curran
9. Timing the Fast Ones (Boardwalk Flyer)
10. Model Railroading, David Marshall
11. Locomotives of the New Haven (Part I)
12. He Bought a Railroad for $301, M. Sheridan
13. Railroad Camera Club
14. Along the Iron Pike, Joe Easley
15. The Boomer Trail

The Reader's Viewpoint

G. A. LATHROP, who used to fire on the D&RGW and who now specializes in stories of narrow-gage railroading, was asked to look over H. D. Ballenger's true tale, "Three in a Row," before we printed it. Lathrop says that his father, Lewis R., retired D&RGW engineer, is the only man left, so far as he knows, who was working through the Black Canyon when the bridge went out. His dad had been called to go down there on a work train the morning after the trestle collapsed. The rest of his letter follows:

THE huge rock, bigger than a house and weighing hundreds of tons, fell during the night about 2000 feet almost straight down. This chunk of granite is still visible on the west side of the Gunnison River. It makes a good fishin' hole. Many's the fat trout I've caught there, although the thing is full of snags, the same being twisted rails and waterlogged timbers that are caught underneath the rock. The wooden bridge was, as Mr. Ballenger says, only temporary. A new steel one, built almost immediately afterward, is still doing duty.

Fatal accidents often come in groups of three. Even so, I am inclined to doubt that Mr. Ballenger actually witnessed as much as he says he did. To my mind he gives himself away when he admits his story is "pieced out with bits of information I have learned since."—GILBERT A. LATHROP, Gunnison, Colo.

* * *

TALK about freak accidents! A fellow named William De Lorenzo was taking his girl friend for a motor ride the other day in New York. He drove over a bridge while a NYC train was passing below; and in swerving to avoid a collision, his car skidded and plunged through a metal railing, and landed squarely on top of the moving train. Luckily no one was hurt.—(MISS) LOIS M. PATTERSON, 3311 Van Buren St., Chicago.

* * *

THERE are many ways of stopping a train, but here's a new one on me. The other day a crippled doctor, Burbank Woodson, saw a woman fall and lay stunned on the track. He yelled at the engineer of an approaching train; but that failed to attract attention, so he threw

his crutch into the cab window. The startled engineer "wiped the clock," stopping within four feet of the prostrate woman. Dr. Woodson's quick action undoubtedly saved her life, but I wouldn't recommend that method of flagging a train as a general practice. An object thrown into a cab window might easily kill one of the men.—W. D. SHERMAN, Lovelady, Tex.

* * *

HERE is an unusual train order issued by the Pennsy, which I copied March 28, 1913:

"Train order No. 32. C&E Eng. 8913. Eng. 8913 run extra to Police Station and return. R.C.B. Complete 10.10 a.m. Dunfee, opr."

This order took the yard engine from the depot to the police station uptown, where three cars of old clothes were loaded to be sent to Dayton for flood sufferers.—L. E. DUNFEE, 143 High St., Xenia, O.

* * *

SECTION HANDS have been armed with shotguns, ammunition has been requisitioned for them, and they have been ordered to make things hot for the droves of blackbirds that roost on MoP and Frisco telegraph wires in such numbers that they are weighted down until they rest on wires below, causing short circuits.—WALTER FRIEDHAFEN, 1024 S. Weaver, Springfield, Mo.

* * *

AMONG locomotive pictures in the RAILROAD MAGAZINE I sometimes find engines I have made many miles on. I am, and have been for 24 years, a boomer engineer. I have worked in 37 states and some foreign countries. In England I worked on the L&Y, which used three-link couplings that cut off many a finger. We could make $10 extra for saving coal and $5 extra for saving oil. I was able to draw the coal premium, but never the oil premium, as I was too free with oil.—H. V. CANUP, Rte. 2, Box 288, Lakeland, Fla.

* * *

REGARDING colored railroaders: A friend of mine, Jake Treadwell, who works for the Long Island at Morris Park shops, started in Sept. 16, 1905, and now claims to be the only Negro employed as a truck driver on the LIRR and, in fact, the only colored man on the whole road holding seniority rights. His father and his grandfather also worked for the railroad, as chef on a private car and ticket-chopper respectively.—CHAS. P. CAMERON, 66-11 Maurice Ave., Winfield, L. I., N. Y.

* * *

IN Sept. "Spot" dept. you printed a photo of live-poultry car No. PPX5131. My records show that this car arrived at Caldwell on Nov. 19, 1935, loaded with live geese from Springfield, Mo.—G. FUNDIN (*agent, Erie Railroad*), Caldwell, N. J.

IN his letter in Dec. issue dealing with the 1922 shopmen's strike, Geo. W. Ainsworth refers erroneously to Havelock, Neb., as a suburb of Omaha and now part of the city itself. Which reminds me: My father, S. K. Cutts, and his brother, G. E. Cutts, were employed on the CB&Q at Lincoln, Neb.; and Dad and I used to go to Havelock by street car from Lincoln. Often I went to the railroad shops with a cousin to play on the dead engines. Sometimes we were so engrossed that we forgot to go home for dinner, and Dad would have to come for us. After I grew up I fired for the Santa Fe on the stretch of track between Denver and Pueblo that was used jointly by the Santa Fe, the C&S and the D&RGW. I am proud to say that my stepbrother, Larry Martin, who was an apprenticed machinist when the shopmen's strike was called, walked out like a man.—CARL W. CUTTS, 7022 Sunset Blvd., Los Angeles.

* * *

B. HANRATH of Amsterdam, writing in Jan. issue, described his ride from Rio to Sao Paulo in Brazil, harshly criticizing the equipment and remarking, "I can hardly believe an English company would not give passengers more comfort." He is quite right. However, the railway to which he refers, the Central of Brazil, is not British; it is owned and operated by the Brazilian Government. The Sao Paulo Railway, whose equipment pleased Mr. Hanrath, is British.—WM. A. HERON, 35 W. 83rd St., N. Y. City.

* * *

BECAUSE of the lamentable fact that 38 of America's Class 1 roads (30 per cent of the country's mileage) are now in bankruptcy or receivership, there are 136 pages of timely reading matter in Harold Palmer's new book, *Investment Salvage in Railroad Reorganizations*, $2, Harper & Bros., 49 E. 33rd St., N. Y. City. Mr. Palmer gives us a clear analysis of the situation and offers suggestions that are of practical value to security holders as well as other persons interested in the financial plight of our carriers.—EDITOR.

* * *

KEEP up the book reviews! Commenting on the lack of good literature on railroads, as was done in the review of Beebe's *High Iron*, there is certainly nothing to compare with the better grade of sea literature. The only things I can think of are Christopher Morley's recent pieces in *The Saturday Review of Literature* and an essay by James Norman Hall, "In Defense of Trains," in *Harper's* about 12 years ago; but these are not strictly railroad.—FRANCIS LEE JAQUES, 610 W. 116th St., N. Y. City.

The Rat-Hole Division

H. G. MONROE'S "Rat-Hole Division" (*Jan. issue*) brought back my boyhood days. My father was an employe of the old CS Railroad for 23 years and I was born and raised on that division. In fact, I first saw the light of day in a company-owned house several hours after a head-on collision between two doubleheaded freights had considerably mussed up our house and front yard. Just after I was born, President Waters of the CS paid us a visit and saw a future employe of the road only a few hours old.

As I grew up I watched the little old engines with oil-burning headlights gradually displaced by the big Santa Fe types and Mikados. I knew that "Rat-Hole Division" almost inch by inch. I witnessed more than one pile-up of a train. Bad wrecks, I mean. Some of the men killed were known to me personally—men who had dandled me on their knees when I was a kid.

In 1923 Dad and I got jobs on the LC&I, he being a trainmaster and I a brakeman and later conductor. Shortly after his death, four years ago, depression forced me into a non-rail job; but I still carry my B. of R. T. card.—CHARLES E. DAVIS, 223 N. Main St., Bangor, Pa.

* * *

THAT "Rat-Hole" article reminds me of the first time I ever rode a railroad train; it was through those CNO&TP tunnels. In fact, I was 17 before I knew that steam railroads usually ran *on* the ground instead of underneath it or on bridges overhead.—BOZO TEXINO (*MoP hoghead*), 2514 Monterey St., San Antonio, Texas.

* * *

AS far as it went, Monroe's "Rat-Hole" was good. I began firing on that division, Chattanooga to Somerset, 178 miles, in 1898 and was promoted to running in 1902. If the author had given us more actual experiences, his story would have been even better.—J. E. EDWARDS, 2803 Sixth St., Tuscaloosa, Ala.

* * *

TUNNELS on the CNO&TP as described in Jan. issue are not so many as compared with those on other roads I have heard of. For instance, the 103-mile Parkersburg branch of the B&O has 23 tunnels, the longest being 3000 feet. All B&O through trains, including *The National Limited*, cover this route, which has been in use since 1856.—R. L. STURM (*ex-telegrapher*), Barrackville, W. Va.

READING "The Rat-Hole Division" reminded me of a trip to Eureka, Calif., from San Jose, 330 miles. I passed through 45 tunnels, 30 of which were on one division of the NWP, 144 miles long between Willits and Eureka.—CHAS. J. ZWAAL, 94 Clifton Ave., San Jose, Calif.

* * *

FROM every new issue of RAILROAD MAGAZINE I learn interesting facts I had never known before. For instance, in Jan. I read that more than 12,000 "Tom Thumb" engines had been built in North America. That was news to me. I learned also that there used to be 27 railroad tunnels on a single division of the CNO&TP. There is only one in the entire state of Illinois —the tunnel under the bluff at East Dubuque—except, of course, for the Chicago freight tunnel railroad. And now we are going to have one big long tunnel here, a passenger subway, ground for which was broken a few weeks ago.—JAMES B. CAIN, 2143 W. Division St., Chicago.

* * *

THERE are plenty of hot, smoky, gaseous tunnels on the Southern Pacific's double-tracked line over the Sierras, 21 miles of tunnels in 28 miles of railroad. To mitigate the danger and discomfort, engines are built cab foremost. And on the Western Pacific, the Feather River line goes through 34 tunnels in 100 miles between Oroville and Reno Jct. Near Portola is Beckwith Tunnel, 1½ miles long. Some time ago No. 85 and another engine had a head-on collision there. It must have been hard on the men involved, judging from the hot smoke and gas you find in a bore of that length.—JACK GIBSON, 118 Mt. Diablo Ave., San Mateo, Calif.

* * *

I WAS much interested in "The Rat-Hole," since the Western Pacific, for which I work as train dispatcher, has a similar division between Oroville and Portola, a distance of 118 miles with 33 tunnels, and with a steady one per cent grade. We used our 251 class Mallets, which can handle 3400 tons on manifest freights and cover the distance in 7 or 8 hours. All engines are equipped with respirators for use of engine crew and head brakemen, but are rarely used except in going through the tunnel between Spring Garden and Sloat.

Changing the subject: The SP trestle over Great Salt Lake, which is pile-driven, is considerably longer than five miles—the length of the Norfolk Southern's bridge across Albermarle Sound, and therefore ought to claim the title of "longest railroad bridge in America" as mentioned in Jan. "Lantern" dept.—GRANT S. ALLEN, 4133 Dee St., Sacramento, Calif.

Abandoned Stations

RESPONDING to the invitation (*in Dec. issue*) to tell about old stations which have been promoted to other jobs, the SP has two such candidates. The building at Kenwood, Calif., on the former Santa Rosa branch is now leased by the Women's Club for a meeting place, while the one at Santa Rosa is occupied as a lumber office.—E. H. NERVO, Box 66, Geyserville, Calif.

* * *

IN Canton the B&O passenger depot, furloughed when the service was abandoned several years ago, has been converted into a fruit market.—JAMES M. CLAPPER (*furloughed Pennsy clerk*), 1117 13th St., N. W., Canton, O.

* * *

AT Poultney, Vt., the D&H modern concrete and brick one-story station has been converted into a restaurant.—ARTHUR ELLIS, 34 Institute Road, Worcester, Mass.

* * *

TERMINAL station of the Bristol Railroad, abandoned April 12, 1930, at Bristol, Vt., has been converted into a dwelling. Being built along semi-bungalow lines, with new features added, the old structure lends itself very nicely to the change. One of the stations along the Burlington-Lamoille branch of the Central Vermont was sold for a dwelling before the last run on the road, June 16, 1938.—WM. H. WANZER, 25 Bay View St., Burlington, Vt.

* * *

THE Illinois Central depot here has got religion. Although it is still used for railroad purposes, part of the building has been converted into a temporary church for the Christian denomination, pending completion of a new edifice.—FRANK SMARS, Ziegler, Ill.

* * *

IN 1933 the Oregon Electric discontinued passenger service between Portland and Eugene, 125 miles. Passenger depots were closed and only freight depots were used. The passenger station in Albany is now a Veterans' Memorial Hall, while the Cornwallis station is used by an Oregon State College club and the Eugene station is a warehouse for a farm machinery dealer. —JAMES RALSTON, Portland, Ore.

* * *

AN abandoned station on the Fond du Lac and Marshfield branch of the C&NW now serves as an ice-skaters' warming-house in a park owned by the city of Ripon, Wis. The building was formerly used for Ripon Jct., a crossing of the C&NW and CMStP&P.

What was the highest speed attained by an interurban car?—ALAN W. SIMMS, Smith Hall, Ripon College, Ripon, Wis.

The Information Booth

RIDING through mountains for two days is a problem that apparently has been solved to the satisfaction of tourists by the Western Pacific and the D&RGW. The solution has been to combine two trains into one. When I first came to Salt Lake City the WP ran a train through Feather River Canyon in daylight, connecting with the D&RGW at Salt Lake City about 2 p.m. There was also a through train west in the morning and east at night. But the depression cut traffic until there was not enough for two trains. To enable passengers to go through the Colorado Rockies in daylight, the D&RGW continued morning arrivals here and evening departures eastward, making good connections at Pueblo with the MoP for St. Louis.

If the WP made good connections with the D&RGW it would have to go through Feather River Canyon at night. It chose not to do this, necessitating a layover here of 6 to 8 hours. The Moffat Tunnel solved the D&RGW problem. *The Panoramic*, running between this city and Denver, is to be consolidated with *The Scenic Limited*, Grand Junction and Salt Lake City.

The WP doesn't know what to do. It hauled more passengers on the immediate connection than on the layover. Suggestions will be appreciated by myself and the WP passenger department.—WARREN J. KIEFER, 378 Cleveland Ave., Salt Lake City, Utah.

* * *

BACK in 1898 I started out with a little camera to "shoot" every car, every locomotive and every ship in sight. I claim to be one of the first to do that on a big scale. Anybody else claim that distinction?—L. S. SLEVIN, Box F, Carmel, Calif.

(EDITOR'S NOTE: *Several of Mr. Slevin's old-time photos have appeared in this magazine. One in Dec. '38 showed the only car of the Calif. St. RR. that escaped the 1906 fire.*

A New Stamp Commemorating the 15th Anniversary of the Founding of the Turkish Republic

SPEAKING of "Tom Thumb Railroads" (*Jan. issue*), can anybody tell what became of the small railroad operated in old Forrest Park, Utica, N. Y.? And can anyone tell me about the motive power and cars operated on the State Fair grounds at Syracuse, N. Y.?—S. BULSIEWICZ, 425 S. Jay St., Rome, N. Y.

* * *

WHO now holds the record for length of train service?—BOB MCLAUGHLIN, 69 Cedar Ave., Rockville Center, N. Y.

* * *

ON a westbound troop train in July, 1918, we passed a wreck on the Cotton Belt between Corsicana and Tyler, Texas. Two trains of old-type open-platform coaches met head-on on a wooden trestle 550 feet long. It was alleged that a rail had buckled from the heat. Who can tell me about this wreck?—CHESTER FLOREA, 1944 Lexington Ave., Norwood, O.

* * *

ANSWERING James Reed's question (*Jan. issue*): The accident to the Grover Cleveland special train occurred on the old Utica & Black River (later RW&O) near Holland Point, N. Y. The engine, D. W. Goodwin, No. 2, broke a side-rod, killing the engineer. The train was stopped by the fireman.—H. W. KEMBLE, 12 Elm St., Auburn, N. Y.

* * *

I'D LIKE to hear from fellows who, like myself, had *both* grandfathers in the railroad game. My mother's father was a conductor and later Hartford ticket agent on the old Hartford, Providence & Fishkill (now part of the NYNH&H). My father's father, John Clark Stanton, was builder and chief owner of the old Alabama & Chattanooga (now part of the Southern Ry.) About 1900 he built an electric line out of Ballston Spa to serve paper mills in that region. Does any reader remember Grandpa Stanton or have access to information about his work?—F. A. STANTON, 82 Dufferin Road, Hampstead, Que., Canada.

* * *

MY bride, Dot, is a rail-photo fiend like myself. When we got married a few weeks ago, nearly two dozen fellow members of the Rail-

Some of the Earliest Equipment Used on the B&O Was Borrowed by Metro-Goldwyn-Mayer for a Movie, "Stand Up and Fight," Based on the Rivalry between Railroad and Stagecoach Lines, Starring Wallace Beery, Robert Taylor and Florence Rice. Above Is a Scene from the New Picture

Photo by Joseph Lavelle

No. 350 of the Spokane, Portland & Seattle. (See Roster on Page 118)

road Camera Club from various part of U. S. and Canada sent us congratulatory gifts in the form of prints for our joint collection. These prints mean more to us than all the pots, pans, rice and tricks we received right here at home. Dot and I feel that we owe each of those Camera Club boys a good cigar for their kind remembrances. We'd certainly like to meet any of them who drift out this way.—BOB WHITE (*GTW section foreman*), Box 235, Saranac, Mich.

* * *

ALPENA, MICH., has perhaps the only high school in the country which regularly charters special trains to take its students to football games—or are there any others? Maybe some readers can tell us.—LLOYD PICKETT and JAMES FORMIN, Alpena, Mich.

* * *

RAILBUS 204, owned by the Illinois Terminal Co., runs between Alton and Crafton daily carrying passengers, mail and baggage. This bus is interesting, as its kind is rarely seen on rails.—LESLIE S. MERRELL, 1221 Walton Ave., St. Louis, Mo.

* * *

FORMERLY a highway bus, our railbus 204 was built by the American Car & Foundry Co. In 1933 our master mechanic at Alton adapted it for use on rails. Drive is by the two rear wheels, the forward end being carried on a double truck. It is powered by a Hall-Scott motor.—W. J. SULLIVAN, Illinois Terminal R.R. Co., 710 N. 12th Bvd., St. Louis, Mo.

* * *

THE "OLD GAL" pictured in Nov. '38, page 136, about which E. A. Gardner requested information, was No. 4, buit by Baldwin in 1878. She was purchased from the Chicago Elevated in 1883; ran on the Thousand Islands Ry. until 1912; and was then sold, with her sister No. 3, to the Point Ann Cement Works near Belleville, Ont.—H. A. COOPER (*Roadmaster, Oshawa Ry. Co.*), Oshawa, Ont., Canada.

CORRECTION: *Photo of D&H No. 60 in Jan. issue was submitted by Earl W. Parry (not Carey), 23 Williams St., Granville, N. Y. In apologizing for the error, we take this opportunity to urge all readers who send us photos or letters to write very plainly, especially names of people, towns, or railroads.*—EDITOR.

* * *

ENGINE No. 60 appears on the official lists of the D&H Co., including the Greenwich & Johnsonville, the Quebec, Montreal & Southern, and the Napierreville railways as class C-1-K mogul, oil, 18 x 24-inch cylinders, 63-inch drivers, weight on drivers 106,700 lbs., total weight 121,700 lbs., dated April, 1916. Two years later her listing was identical except for the word "oil." The 60 was not listed at all in July '28, presumably indicating she had been sold or scrapped.—C. L. TERROUX, Advisory Council, Canadian RR. Historical Ass'n, 48 Rutland Rd., St. Lambert, Que., Canada.

* * *

PHOTO of D&H No. 60, which you published, was taken between 1907 and 1910 by Harry Rood, a professional photographer now living in Poultney, Vt., I am informed by Gardner Davis, Jr., of Poultney.—LOWELL GREEN, Bellows Falls, Vt.

Stamp Commemorating the 35th Anniversary of the Opening of the Indo-Chinese Ry. by Former Pres. Paul Doumier of France

A Butter Train on the Dardanelle & Russellville Pulled by the Engine Which Was Used in the Film "Jesse James"

CORRECTION: That crossing sign pictured in Jan. *Along the Iron Pike* is not on the N. Y. Central but is on the Grasse River, a logging road running between Cranberry Lake and Childwold Station, N. Y., a few miles from Cranberry Lake and more than 40 miles from Harrisville.—Wm. J. Barton, 936 Floyd Ave., Rome, N. Y.

* * *

CORRECTION: Robert W. Hanft of Brainerd, Minn., leaving Jan. 22nd on a 20,000-mile engine-picture tour, says the 4-4-0 Dardanelle & Russellville power used in the "Jesse James" technicolor film was built by Cooke in 1861, not by Brooks in 1888 as stated in our Feb. issue. We apologize. The misstatement appeared originally in the *Missouri Pacific Lines Magazine;* we followed it because we thought it was correct. Also, our whole article was checked over by the D&R general manager. The only mistake he found was the cost of rebuilding the locomotive, which he said was closer to $5000 than $2000.

And now as we go to press an interesting letter comes from Engr. Phillip W. Gooch, Martin Hotel, Monett, Mo., who ran the old gal while the movie was being made. Mr. Gooch backs up Mr. Hanft on the date. He says the builder's plate is still on her steam chest. He says, furthermore, she appears in the film as the *St. Louis Midland No. 8,* not 6 as we stated.

Mr. Gooch relates some authentic incidents in connection with the filming. About 150,000 motorists came in 65,000 cars to watch the fun, so the movie people had to move to a more isolated spot before they could go ahead. The sign on the station at Neosho, Mo., where some of the scenes were laid, was temporarily changed to "St. Louis," while the one at South West City became "Liberty, Mo." An old lady coming into Neosho for the first time in the KCS *Flying Crow,* was so confused by the "St. Louis" sign that it took the crew 20 minutes to persuade her to leave the train.

In addition to Gooch, the crew on the "Jesse James special" consisted of F. A. Logan, conductor; Elmer Ballay, fireman; Harry Spirgin, brakeman, and a fat express messenger known as "Tiny." A second crew took charge of the train before and after the scenes were shot; none of them appeared in the photoplay. A Missouri-born actor named Harry Hollman, who didn't know the difference between a brake valve and an airhose, sat in the cab and played the role of engineer.

When depot scenes were shot, Mr. Gooch took the part of an old-time station agent, herding the excited people off the track as the train that had been held up by the James gang rolled into town. News of the robbery, brought by a courier, had preceded the train; so the natives were naturally in a furore. About 150 persons

were in the cast, all dressed in costumes of the period. Mr. Gooch tells us that great care was taken to assure accuracy of the film, and closes his long letter (which arrived too late to be printed here in full) by urging readers not to miss "one of the most effective films of pioneer American life ever made with a genuine railroad background."—EDITOR.

* * *

CORRECTION: H. T. Crittenden, R. W. Tuttle, P. W. Quinlan and others call attention to an error which appeared in our caption under the full-page picture on page 88 last month. Instead of unloading iron ore out of a steamer, the equipment shown in the photo is dumping coal from a car. We're sorry for the misinformation; we took the photographer's word for it. Incidentally, things must be done pretty fast on the Great Lakes, according to Mr. Tuttle, who reports a record several years ago of 90 cars dumped (unloaded) in 96 minutes.—EDITOR.

A Section For Juice Fans

Photo by Bryant A. Long, 40 Spencer St., Hyattsville, Md.

One of the Sturdy Interurban Cars of the 17-Mile Capital Transit-Maryland Line That Rolls Directly Past the White House in Washington. This Shot of No. 965 Was Made at Hyattsville, Md.

BACK in 1912, when railroads were still being built instead of abandoned, State Senator H. H. Evans of Illinois, laid out $500,000 for right-of-way, rails and equipment. The result was the Fox & Illinois Union, 20 miles of standard-gage electric interurban connecting Yorkville with Morris, plus intermediate stations at Kentland, Lisbon Center, Saratoga, Church Road and Central.

After years of profitable operation, the little line was thrown into the red by highway competition; and in Oct. '38, Donald Frazier, who had married the grand-daughter of the road's founder and was now receiver, obtained permission from the I. C. C. to abandon the road. Now Mr. Frazier is a bit sentimental. He decided that, before the wreckers were called in, the F&IU should have one last fling. So he borrowed a boxcar from the Burlington and hooked it to the one item of rolling stock belonging to the F&IU, a gas-electric car of the type known as "galloping goose." And then with John Murray at the controls, some 40 people, armed with steaks, refreshments and trip passes, made the graveyard run.

Before the train pulled out, Mr. Frazier mounted a chair in the car and made a short speech. "Friends," he said, "the F&IU is making its last trip. End of the line is Kentland, six miles out. All rules are suspended except one: Keep your heads inside the car or the timber along this line will knock them off."

Five hours, eight cases of beer, forty sirloins, and a dozen miles later, the last loitering limited faltered to a stop back at the Yorkville station. The F&IU was definitely past history.—HARWELL E. WEST, 225 W. Huron St., Chicago.

* * *

WHILE other electric roads are being abandoned, the Lehigh Valley Transit Co. is rehabilitating its equipment. Forty cars from discontinued lines are being rebuilt, including 4 from the Dayton and Troy. These are painted a bright red and lettered "Eastern Limited." They have individual seats richly upholstered and a modern lighting system. In the rear are 8 swivel chairs like those on Pullmans. Eleven C&LE cars are being rebuilt for the Liberty Bell run, Allentown and Philadelphia. They also will have individual seats and lounge compartments. Some

Courtesy of Winthrop S. Boggs

The Fifth in a New Series of 6 Stamps Issued by the Russian Soviet Government to Mark the Completion of Another Section of the Moscow Subway

Ohio Valley cars are being remodeled for local service.—ROBERT F. COLLINS, 26 Brickell Ave., Westwood, N. J.

* * *

SOME time ago there was an inquiry about the Devil's Lake (N.D.) Chautauqua Electric Railroad. An uncle of mine was fireman, conductor and baggageman during its first years of operation. It was not an electric but a standard-gage steam line 7 miles long, in operation from 1900 to 1925. Round trips were made every hour 6 a.m. to midnight. Motive power was one 12-ton 0-4-4 locomotive with 30-inch drivers. Tender was on the same frame as the boiler. The engine had vacuum brakes; but the cars had only hand brakes, and link-and-pin couplings.—JOHN GERMAN, 635 Fifth Ave., Glasgow, Mont.

* * *

HOW many trolley companies name their cars? A line here that was abandoned in 1937, the Allegheny Valley Street Ry., named its eleven newest cars from the eleven towns through which it passed. It extended between Natrona and New Kensington, Pa. Busses now operate over this route.

The last cars acquired, the AVSR were built in 1931 by the Cincinnati Car Co. They were easy riding and fast, regularly attaining 50 miles per hour. Since the AVSR folded up, they have been running on the West Penn Interurban Lines. Recently we went over to Greensburgh to see them, and rode 837 as far as Hecla Jct.

These cars are converted two-man affairs with center and end doors, smoking section and toilet. They have magnetic-rail brakes with hand brakes to hold them after stopping. Curves are banked so steeply that cars at slow speed would turn over. One hill is three miles long. Our motorman was doubtful about those cars in winter. The wind blew one door open, so perhaps he was right; they may be chilly.

Returning from Latrobe, we rejoined our route going. After lunch we caught another big car for Connellsville and Uniontown. Here we saw the three-story passenger terminal and the freight terminal. Returning to Connellsville terminal, we changed to an old 600 car for South Connellsville. Back to Scottdale, we caught a Western Division car to Greensburgh, arriving at 6.10 p.m., the end of a perfect day. The West Penn must be the hilliest and crookedest interurban ever.—EDWIN PORTER, 1117 Carlisle St., Tarentum, Pa.

* * *

HERE is an account of a trip from Chicago to New York by interurban in 1910: City trolley to Pullman station; Chicago, South Shore & South Bend to South Bend; Northern Indiana to Goshen, Ind.; Winona Interurban to Peru; Western Ohio & TB&S to Toledo; Lake Shore Electric to Cleveland; Cleveland, Painsville & Eastern to Ashtabula; Pennsylvania & Ohio to Conneaut; Cleveland & Erie to Erie; Buffalo & Erie Traction Co. to Buffalo; Buffalo, Lockport & Rochester to Rochester; Rochester, Syracuse & Eastern to Syracuse; Utica Ry to Utica; Utica & Mohawk Valley to Little Falls; NYC (steam) to Fonda; FJ&G to Schenectady; Schenectady Ry to Albany; Albany Southern to Hudson; Hudson River Day Line (steamboat) to New York.

Fares, 1,163 miles, including 114 miles by boat and 30 miles by steam train, $19.64. It could have been done in a week's time, all by daylight. The traveler wasted a lot of time taking short side trips. Very few of the roads mentioned are now operating.

Will someone tell me what has happened to the FJ&G, the LSE, the B&ET and the Indianapolis & Southeastern after abandonment in recent years?—FRANK M. BROWN, 5308 N.E. Killingsworth, Portland, Ore.

The British Empire Heard From

BRITISH RAILWAYS, by Horace Greenleaf and Howard Hayden, announced as "the most comprehensive non-technical book on the subject yet published," recently came off the press of Frederick Muller, Ltd., 29 Great James St., Bedford Row, London, W.C.1, England. It has 232 pages, in addition to the not-numbered pages and inserts used for the maps, diagrams and 50-odd photos, and sells in England for 6 shillings net.

This volume presents an intimate picture of railway working. It traces the progress of the British lines from the small horse-drawn affairs of 150 years ago to the great steel highways of today; outlines the many ramifications of the modern companies; and explains such things as

the working of a locomotive, the meaning of signals, the history of the Pullman car, and the reason for electrification projects.

The reader travels with the driver and fireman on an express engine; watches the chef and stewards at work on a dining-car; peeps inside the famous Travelling Post Office; walks along the track; and follows in the wake of a 90-miles-an-hour flier on its journey across England.—EDITOR.

* * *

OUR railways, like those in North America, are having to scratch gravel to dig up money enough to pay expenses, to say nothing of a few odd pence left over for the stockholders. Receipts of the four British rail systems last year totaled only about 30,000,000 pounds ($150,000,000), which is two-thirds of the 1929 total.

A year ago our freight rates were raised 5 per cent. If they had not been raised, the deficit today might be still worse. However, passenger traffic has been maintained; almost all the decline has been in freight. Just how much freight was shifted to motortruck concerns last year because of the rise in railway rates is an open question.

The railways' rolling stock and stations are getting shabby because there is no money to paint them. Many developments planned have had to be cancelled. Although 40,000 men have been added to the railway payrolls in the last five years, all or most of these will have to be furloughed if the present decline continues.—HARRY CORT, 8 Leighton St., Moston Lane, Manchester 10, England.

* * *

SORRY to contradict the writer of a letter in your Aug. '38 issue, but the first train in New South Wales did not run on Sept. 27, 1855. The first official trial trip was made on May 21, 1855, when a special train conveying the governor general left Cleveland Paddocks at noon and proceeded as far as the Long Cove viaduct, 4½ miles, a ten-minute run.

The first public meeting to promote a railroad in N.S.W. was held at Sydney in Jan., 1846. A company was incorporated in Oct., 1849; the first sod on the line was turned by the Hon. Mrs. Keith Stewart in July, 1850; the company was taken over by the government in Aug., 1853; and train service was begun, Sydney to Parramatta, in Sept., 1855.

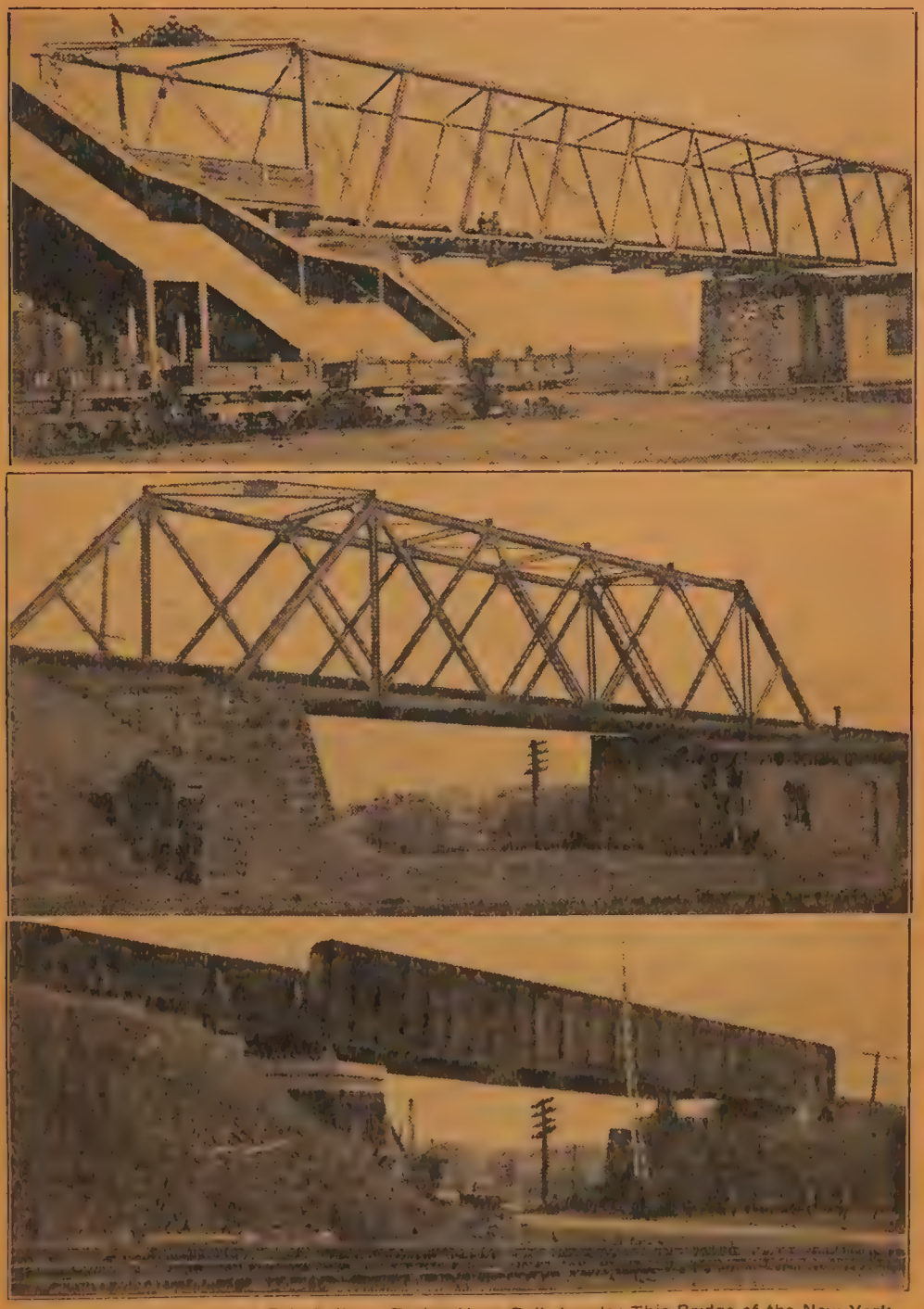
The contractor who built the first section of the line was allowed 3000 pounds ($15,000) on account of the increase in prices of materials, wages, etc., over and above the contract price, due to the discovery of gold.—G. S. HAYMAN, 166 Macpherson St., Bronte, N.S.W., Australia.

* * *

CABOOSES in South Australia are modeled on American lines, as was only natural, since the whole S.A. system was reorganized in 1925-6 by an American, the late W. A. Webb of Texas. Our standard caboose (*see photo*) is 5¼-foot gage, 37¾ feet long and 8¾ feet wide. The cupola has leather-cushioned seats, with air valves in the center. At one end are food lockers, seats, desk, stool and shelf with pigeonholes. The other end was formerly fitted with four bunks. Now the space is used for small quantities of freight. Cabooses are painted standard gray. They are used on long-distance freight trains—cattle, sheep, wheat and mallee (firewood). Local freight use different brake vans. No other Australian line uses cabooses. Our locomotives, tracks and signals are of American type. The railroads of other states, especially Victoria, are run on English lines.—G. E. GLASTONBURY, 89 Tusmore Ave., Tusmore, South Australia.

Photo by G. E. Glastonbury, 89 Tusmore Ave., Tusmore, South Australia

The Cabooses Used In South Australia Are Much Like Those of North America



For Sixty-Seven Years the Erie Railway Trains Have Rolled under This Bridge of the New York, Susquehanna & Western at Hawthorne, N. J. Top Photo Shows the Original Bridge, Constructed in 1872; Center, the One Which Replaced It in 1894; Bottom, the Bridge Installed Five Years Ago

Each of These Four RCC Boys Belongs to the Railway & Locomotive Historical Society, Chicago Chapter, and Has Traveled Thousands of Miles in Search of Engine Pictures and Other Railroadiana. (Left to Right) Dan Peterson, Harold C. DuBal, M. C. Poor, D. W. Yungmeyer. All Use Speed Graphic Cameras and Weston Exposure Meters, and Work on Tripods 100 Per Cent of the Time. Their Equipment Includes Chalk to Freshen up Faded Engine Numbers, Hooks to Cut Down Weeds, and Cigars for Bribing Hostlers to Get Locomotives Spotted with Their Side-Rods Down—All on Behalf of Good Photography!

Railroad Camera Club

READERS who collect, buy, sell, exchange, or make pictures of locomotives, trains, cars, etc., are listed here as members of the Railroad Camera Club. This Club also includes other railroad hobbies such as collecting railroad books, tickets, timetables, train orders, trolley transfers, etc.

There are no fees, no dues. Names are published in good faith—but without guarantee.

Membership card and pin are given free to anyone sending us the latest Reader's Choice coupon (page 143) and self-addressed stamped envelope. (If you live in Canada or any foreign land, enclose a loose 3c stamp from your country instead of the envelope.)

If you don't want to clip the magazine, make your own R. C. coupon.

Address Railroad Magazine, 280 Broadway, New York City. Tell us what you want or offer. Unless you do so, your name will not be printed here.

RICHARD ANDERSON, 4516 N. Marmora Ave., Chicago, Ill., has 700 foreign photos of various countries and sizes for sale; write and tell him in what you are interested. Also buys 116 size interurban & trolley negs.

T. B. ANNIN, 43 Fairwood Rd., Madison, N. J., is interested in postcard or larger pix of old power on RO&LC, Lebanon Springs and B&R; also buys or trades for DL&W, CNJ, NH, Penn-Rdg SS Lines and Rahway Valley.

CARL BACKMAN, 917 21st Street, Rock Island, Ill., will trade 8x10 official photo, with specifications, of CB&Q *Aeolus* for 1 same size or 2 smaller size (none smaller than 616) broadside views of following: GN 2550, 2570, 2030 types; CGW 800; C&NW 3000; or any recent transcontinental UP types—specifications to be included; write first.

ROY BAKER, 13421 Young Ave., Detroit, Mich., offers 4x10, 616, and p.c. photos for sale, incl. many old-timers; list & 4x10 print of either old LS&MS 660 or UP 768 Camelback, 15c. Also 10x24 double-weight enlargements, $1.10.

E. P. BELKNAP, R. R. 1, Pendleton, Ind., offers 2 dif. Indpls & SE and one I&C ticket for 25c.

ROBERT BEVERLY, Priest River, Ida., has side view photos of locos used on GN western lines from 1898-1938, 10c ea., or $1 per dozen.

WM. BLAKSLEE, 1441 N. 16th St., Philadelphia, Pa., wants to buy old-time and modern pix of MeC engines used on Bangor-Calais-Vanceboro runs; send prices first.

BOB BLATT, 16200 Detroit Ave., Lakewood, O., wants to hear from high school fellows who live along, or who have pix of Nickel Plate Rd.

ROBERT BOYD, 1224 W. Jefferson St., Louisville, Ky., collects U.S. timetables.

HENRY BRAINERD, 10 Upland Rd., Wellesley, Mass., trades & sells prints of San Diego, L.A., PCRR, S.F., Oakland, El Paso, New Orleans, Louisville, Cincy, Springfield, Vt., trolleys.

J. H. BRINCKMANN, Jr., 44 Charles St., Metuchen, N. J., has 3¼x4¼ prints of Reading, Pa., horse car, 10c ea. Also has 116 size CNJ, Erie, LV, PRR, Rar. River and SP, 5c ea.; list & sample, 5c.

E. C. BROWN, 130½ S. Mercer St., Greenville, Pa., trades 116 size locos for p.c. views of cities, towns, etc. Has scrapbook of 200 p.c. loco photos to trade for pr. 8-power field glasses, or sell for $10.

FRANK BROWN, 5308 N. E. Killingsworth, Portland, Ore., will trade ⅛" scale drawings of trolleys & interurbans for photos of same. Write first stating car wanted, bldr., yr. built and Co., & enclose list & stamped envelope for information.

ALBERT BURGER, 1167 Hoe Ave., Bronx, N. Y. City, offers many *Railroad Stories*, 5c each., *Model Railroaders*, 5c ea., *Baldwin Loco Mags.*, 25c ea., NYC Rulebook, $1; also 20 dif. trolley & interurban tokens $1. Send 3c stamp for complete list.

* * *

JAMES CAIN, 2143 W. Division St., Chicago, offers May '30; Dec. '31; Feb., Mar., Dec. '32; Feb.,

Oct.-Dec. '33, and Aug. '34 *Railroad Stories* (covers missing) for $1 plus postage; write first.

C. CALVERT, 1733 N. Willington St., Phila., Pa., has B&O train orders, 2c ea.

J. M. CAMERON, 430 Sydney St., Cornwall, Ont., Canada, will trade 8x10 photo of CNR streamliner for best offer in CNR photos; write first.

M. S. CHAMBERS, Elkview, Pa., wants photos & info. on old Pt. Townsend & Southern and Lancaster, Oxford & Sou.; also copies of *Railroad Stories* before 1935.

J. W. CHOVIN Sr., Vanscoy, Sask., Canada, wants Dec. '35 and May '32 *Railroad Stories;* send prices first.

JOSEPH CLASGENS, 1351 N. Mansfield Ave., Hollywood, Calif., will sell 5x7 photos of drawing of old Kalamazoo & S. Haven *Fearless* for 50c ea.

ROBERT CLEMENT, 39 Center St., Jamestown, N. Y., offers list of steam engines and list of trolley & interurban photos; also trades or sells negs. of these.

STANLEY CREWS, 419 W. 115 St., New York, N. Y., has pix of 14 eastern roads, incl. Rahway Vy., N.Y. Dock, NRCoal & Wharf Co., Rdg. *Crusader,* 116 size at 6c ea. Few negs., 15c ea.; list & sample print, 10c ea. 2x3 print of NYC&N No. 1 taken in 1890, 10c.

C. B. CULMER, Tylersburg, Pa., has 116 size negs. of many Diesels & streamliners: *Hiawatha, 20th Century, Aeolus, Chief, Rocket, Capitol Ltd., Abraham Lincoln,* etc.; write what you want. Also Sept. '30; Apr., June, Aug., Sept., Nov. '32; Feb. '33; May, Oct., Dec. '34; July-Sept. '35; Jan.-May, July '36 *Railroad Stories* to trade for Feb., Mar., Oct. '30; Mar. '31; June '34; Oct. '35; Apr. '37; Aug., Oct. '38 issues.

* * *

JOHN DENNEY, 28 S. 2nd St., Columbia, Pa., has for sale 616 size elec. & steam line photos, 7c ea., 25 for $1. Will trade prints for, or will buy 116 or 616 negs., pix, tables, tickets, etc., of N&SV, TV, W&NB, NY&P, S&NY, K&E, E-N, SNY, Visalia Elec. and other narrow-gage, short or elec. lines.

RALPH DERBY, Brunswick, Me., offers rail-section souvenirs of B&H narrow-gage, polished and inscribed, suitable for paper weights, 50c, incl. 2 photos of B&H engines & history.

GEORGE DICKERT (ex-boomer), c/o N. Warren Hospital, N. Warren, Pa., will be 75 years old Feb. 11th. Will welcome visits & letters from fans, and will answer those with stamped reply envelope.

ELBERT DRAZY, 1105 S. Myrtle Ave., Kankakee, Ill., wants info. & photos of old Chicago & Interurban (C&ST). Offers photos of midwestern interurbans.

* * *

TOM EASTLICK, 1764 J St., Eureka, Calif., has few NWP pix & ads for exchange; also Municipal trolley transfers.

D. J. EVANS, 4407 Harrison, Kansas City, Mo., wants photos of n.-gage rolling stock and engines, also track plans.

* * *

MARTIN FLATTLEY, 1543 W. 66th Ave., Oak Lane, Phila., Pa., wants to contact fans who collect PRR construction numbers to trade info. with them; is compiling PRR loco register. Has 1385 dif. PRR and LI steam engines in 116 size to trade & sell.

ROBERT FOSTER, P. O. Box 375, E. St. Louis, Ill., has many prints for sale—p.c. list with 5 samples, 50c; 116-616 list & 5 samples, 25c. Wants good p.c. size of LV, DL&W, D&H, NP, GN, RF&P, ACL, FEC, B&O, Rdg, CNJ, New Haven, B&M, B&A, Milw.

WILLIAM FOX, c/o N.Z. Govt. Rys., Cross Creek, North Island, New Zealand, will trade photos of goods (frt.) and pass. trains on Rimutaka Incline and snaps of N.Z. railcars & elec. locos for photos of latest American locos and trains.

EDWARD FRANK, Jr., 1954 Bissell St., Chicago, has 116 size pix of Chi. Surfaces Lines' mail car, 10c ea., or trade for same size prints of other street railway post offices in U. S. and Canada.

* * *

JOS. GALLOWAY, Jr., 3627 Torrance Drive, Toledo, Ohio, will buy any pix of Toledo & Western Interurban cars (except 59, 60, 61) and freight motors (exc. 76, 78, 80).

JACK GARCIA, Rivulet, Mont., trades or sells pix of wrecks and other rail scenes—set of 12 views NP wreck at Willis, Mont., $1. Especially wants pix of Milw. wreck at Miles City, Mont.

WALTER GERTZ, 631 E. 130, Cleveland, O., wants pix of NYC 2700, 2800, 2900, 5200, 5300 and 5400 engines.

CLARENCE GORDON, 3467 W. 36th Ave., Denver, Colo., has photos of all locos on D&SL, D&RGW and some UP to sell or trade for eastern roads.

J. GORIANY, 2 W. 67, New York, N. Y., will buy Apr. '32 to Jan. '36 *Railroad Stories;* write first.

* * *

K. B. HANEY, 515 W. 5th, Topeka, Kansas, starting rail pix collection; send lists.

JOHN HARCUS, 159 Marantette Ave., Windsor, Ont., Canada, has many rule books and 6 vols. of *Railway Library* (1910-15) to trade for 116 or p.c. photos. Trades D&RGW, Wab., CNR, NYC, ETR, LV, PM, CPR engines for photos of fire engines; list & sample, 5c.

HAROLD HARDAGE, 39 Main St., W., Smith's Falls, Ont., Canada, wants advice on how to keep his photo collection.

HAROLD HARGRAVE, 49 Dix St., Dorchester, Mass., wants to hear from those interested in an excursion over E. Mass. St. Ry. to Quincy and Stoneham over part of Boston El, with tour of car barn at Quincy. Will be sponsored by Dorchester Elec. Ry. Club.

HENRY HARNER, 323 N. West End Ave., Lancaster, Pa., wants IC pix, and PRR, GN, NP, CPR, CB&Q emp. and pub. tables before 1930, tickets, passes and train orders. Has 116 size pix in trade; send list & samples for his.

JOHN HARRIS, R.D. 1, Box 28, Lincoln University, Pa., trades 116 size PRR, Rdg., B&O negs. for certain PRR, Rdg. and LI classes. Also has many prints of these roads and CNJ, DL&W, Erie, LV, NYO&W, 50c doz.; list & 3 samples, 15c.

HARRY HARVEY, 7302 Perry Ave., Chicago, has new list of 122 size engine photos GTW, IC, MOP, NYC, Frisco, etc.; also 5x7 and 8x10 enlargements; write for list.

L. D. HATTON, 92 Charlton Rd., Andover, Hants., England, will trade GWR photos for U. S. engines.

C. A. HEATH, North Franklin, Conn., will ex-

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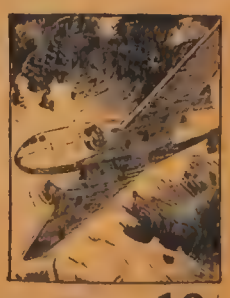

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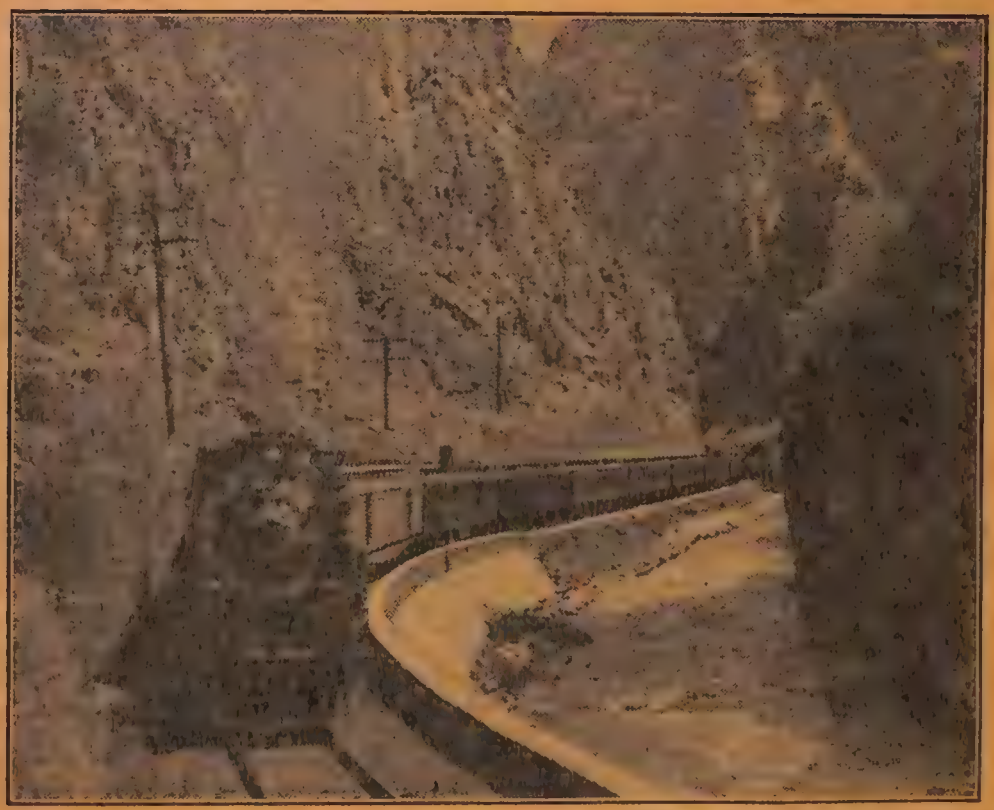

Photo by R. W. Merriman, 402 S. West St., Carlinville, Ill.

Although Innumerable Pictures Have Been Taken of D&RGW Trains in the Royal Gorge of Colorado, This Shot, Using a 116 Size Negative, Was Handled So Effectively That It Was Adjudged the Best Photo of the Week in a Recent Contest Sponsored by the East St. Louis (Ill.) Journal. Congratulations to R. W. Merriman, Member No. 10623 of the Railroad Camera Club

change tickets & passes. Has large stock of Me. narrow-gage roads, StT&W and many others. Few SR&RL timetables to swap for those of small or aband. roads.

HANK HEINL, 415 Grant St., Akron, O., starting collection of juice photos. Has 1929 *McGraw Elec. Ry. Directory* ($10) to trade for best offer in 116 size trolley photos; write first.

G. HIND, 73 Tudor Ave., Bolton Lanes, England, will trade foreign engine-pix stamps.

BILL HIPP, 7434 Parnell Ave., Chicago, wants to buy photos of Rock Island Atlantics; write first.

KENNETH KANDER, 123 Wyoming Ave., S. Orange, N. J., wants old emp. tables of both large and small roads. Has modern pass. & emp. tables to exchange.

WILL KEITH, 512 S. Main St., Canton, Ill., wants to sell following copies *Railroad Magazine*: Nov., Dec. '34; Apr.-Dec. '35; Jan., Apr. '36; Jan., Feb., July '37; Feb. '38.

LE MAR KELLEY, 1513 Moyer Ave., Elkhart, Ind., has p.c. size prints of Milw. Rd., NYC, B&O, Wabash, CB&Q, Erie, C&E1, C&O, N&W and many others, 4 for 25c, 18 for $1; send 10c for list & sample.

KENT STATE U., Kent, Ohio, announces its 2nd annual competition in news and pictorial photography, with March 1st as closing date. Write Prof. A. Clarence Smith for details.

O. R. KENYON, 530 E. 4 St., Wilmington, Del., wants 116 or 616 size negs. of PRR Nos. 33, 86, 760, 7007, 7408, 7536, 9449 and 9999. Has B-6sa, D-16sb, E-3sd, E-5a, E-6s and H-9s in trade.

KENNETH KINGSBURY, 715 W. 5th St., Topeka, Kans., has 3¼x4¼ pix of Santa Fe, UP and Rock Island locos traveling through Topeka, and old engines in Santa Fe shops, 10c ea. plus postage, or trade for pix of Mountain type locos. Write giving engine No. & wheel arrangement of what you want or have.

D. H. KIRKWOOD, Box 226, Foxburg, Pa., wants to hear from anyone having old photos or recopies of Pittsburgh & Western, PB&B, Emlenton & Shippenville, FStP&C and Tionesta Valley engines.

N. B. LEONARD, 73 Montvale St., Roslindale, Boston, Mass., wants to hear from fans interested in RR fire-fighting apparatus and depts.

WILLIAM LOWE, 5704 Garfield, Kansas City, Mo., will sell Oct. '34, May '35 and Feb. '36 *Official Guides* at 65c ea., plus postage.

GARON McCOID, 531 Olive Dr., Whittier, Calif., collects timetables, any roads.

WARREN McDONALD, 3107 Polk St., Chicago, will buy photos and tables of aband. & operating elec. lines of Ill. and Wis. State price, condition, number of car or loco.

FRANK McDONOUGH, 3404 Windsor Ave., Baltimore, Md., collects transfers & will trade forms; also has route maps and tables, various roads.

K. E. McLAUGHLIN, 507 May Ave., Ft. Smith, Ark., wishes to sell 16 m.m. G.M. Moviematic with projector which takes 40 candid shots or movies; send bids.

HENRY MERCUR, 348 Church Lane, Germantown, Philadelphia, Pa., will buy, sell or trade pub. & emp. tables before 1930 and aband. & short line tables up to date; has many obsolete PRR and Rdg. forms.

6TH MILWAUKEE SALON of Photography will

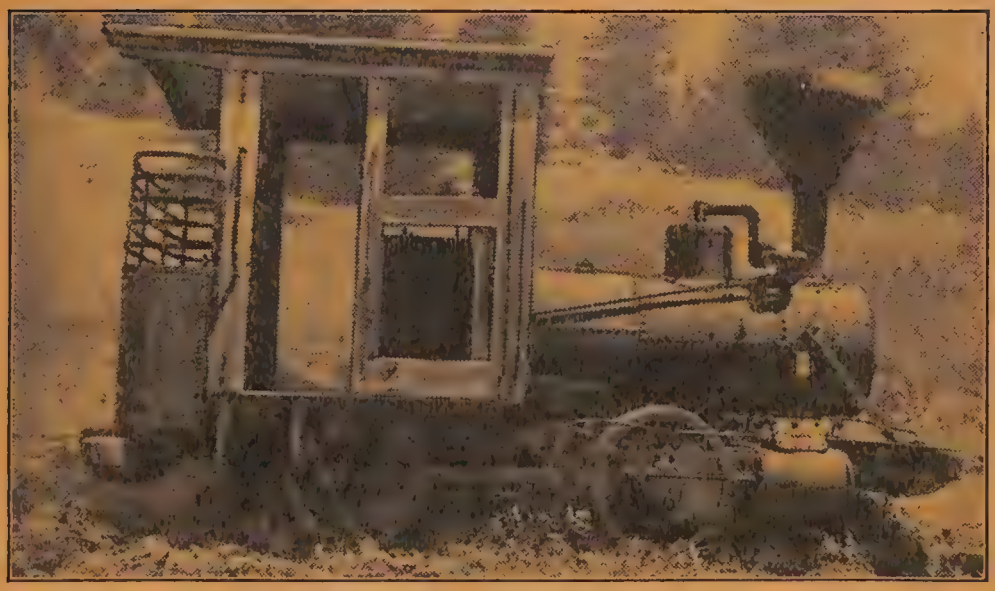

Photo by Irving Kempe, Fort Bragg, Calif. (Prints, 10c ea. plus stamped env.)

This Ancient Switcher Rests in Silence, Disturbed Only by an Occasional Fisherman, Near the Old Glen Blair Mill About Ten Miles from Fort Bragg, Calif. Her Drivers Are 2 Feet in Diameter, Her Cylinders 8x12 Inches. Who Knows Her History?

be held under auspices of Photo Pictorialists of Milwaukee, 772 N. Jefferson St.; write them for brochure—closing date March 1st.

H. J. MULVANEY, 3238 N. Racine Ave., Chicago, wants copy of Dec. '29 *Railroad Man's*; write first.

BENSON MURRAY, Hancock, N. Y., offers *Baldwin Loco Mags.* (Jan. '36, Jan. '37, Jan. and April '38) and *Santa Fe Mags.* (Jan. '28 to June '38).

GENE MURRAY, Derry, Pa., will trade PRR train orders, clearance cards for orders other roads.

JOHN MITCHELL, 136 Dunvegan Rd., Toronto, Canada, has CNR eng. prints—116 at 6c ea., 120 at 5c ea. Will buy photos of GTW 6406 and 5632.

JOHN NORTON, 77 Maywood St., Roxbury, Boston, Mass., offers 11 copies *Baldwin Loco Mags.*, Oct. '35-Oct. '38, for $3.50; write first.

ELZEAR ORCHARD, Box 130, Bedford, P. Q., Canada, will trade rail shots.

GEORGE PARK, 86 Bridge Rd., Belmore, N.S.W., Australia, will trade rail and trolley photos, tickets and tables; also travel stickers. Will buy photos of streamliners, Diesels, wreckers and crack trains such as *Broadway Limited*.

MARY PAYNE, R.R. 1, Manhattan, Kan., wants bids on 15"x60" railroad map (no roads west of St. Louis) from *American Ry. Guide* of about 1840.

ROY PETERSON, R.R. 3, Belvidere, Ill., wants photos of C&NW Class D engines. Has several hundred 616 size photos for sale of IC, Milw, CB&Q, C&NW, GN, NP, Soo Line, DM&N, Omaha, etc.

JACK PENGLASE, Trans Australian Rys., Pimba, S. Australia, wishes to exchange engine photos.

PIX (weekly news pictorial), 60-66 Elizabeth St., Sydney, N.S.W., Australia, offers prizes for candid railway camera shots.

KEITH PRATT, Bloomfield Station, Prince Edward Island, Canada, wants to hear from engine men or fans in Germany, New Zealand, Japan and Australia; also wants pix of Me. narrow-gage lines, and HY&T, Nevada Central and ENC&S.

NICK PROTAN, 4712 4th Ave., Brooklyn, N. Y., will trade ICC booklet *Rules & Instructions for Inspection & Testing of Locos*, and blue prints of PRR locos E-6s and G-5s (O gage) for engine pix.

GEORGE RANDO, 354 Harter St., Herkimer, N. Y., will exchange rulebooks, train orders, photos.

JOHN REID, 183 L'Esperance St., St. Lambert, Que., Canada, will trade *Railroad Magazine* and CNR Mags. for past 2 years, CNR and Rutland pix, and CNR train orders for engine pix.

WALTER ROBBINS, 1313 N. John St., Palestine, Tex., wishes to trade old train orders, trip & annual passes, switch keys, small rail pay checks, 1-25c; also some emp. tables to sell. Will send his list for yours.

FRANK ROBERTS, R. 3, Spartanburg, S. C., has 6-lb. engine nameplate of Baldwin Loco. No. 24292 (1904) to trade for rail pix.

ROCHESTER, N. Y., fans interested in forming a railfan group should get in touch with Kenneth Chase, 49 Savannah St.

LOUIS RUPPRECHT, 742 W. 81st St., Los Angeles, Calif., will pay cash for right and left detailed shots, pref. enlargements, of SP Class MT2, 4385-4395 engines; also tender shots.

ROBERT SCHREPFER, 4041 N. Moody Ave., Chicago, will pay cash for map, tickets, photos, timetables of Fox & Ill. Union.

H. S. F. SCULLEY, 4 Upperton Rd., Sidcup, Kent, England, starting.

CLARENCE SEARLE, Duncan, B. C., Canada, will trade CNR, CPR, PGE, E&N engines and trains for other roads.

F. SHENNEN, Editor, *Railway Enthusiasts Magazine*, 11C Castlereagh St., Sydney, N.S.W., Australia, will welcome photos from American enthusiasts. Lists names of railfans in his Photo Exchange column. Specimen copy sent for 18c.

ERNEST SHERMAN, Deerfield, Mass., offers pen-and-ink drawings of Santa Fe, B&M, CPR, NYC, CNR, B&A engines, $1 ea. plus postage.

W. D. SHERMAN, Lovelady, Texas, wants any size photos of Texas logging roads—the older the better; write first.

HENRY SORENSEN, Star Route, Arcata, Calif., will trade NWP, HR Co., TPL Co. and many western roads for any Colo. Mid, esp. No. 36, and other mid-west lines.

O. C. STEELE, Box 363, Bothell, Wash., offers Feb. '14 *Railroad Man's Magazine*. What offers?

DONALD STEFFEE, 512 8th Ave., Brooklyn, N. Y., will buy or trade for Cotton Belt emp. table with *Blue Streak* schedule. Offers CMStP&P emp. table with *Hiawatha* schedule, C&NW with *400*, or others.

J. H. TIERNEY, 419 Victoria Road, Glasgow, S. 2, Scotland, is interested in p.c. size photos of U. S. Railway Post Offices.

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